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AN INQUIRY INTO THE INTERESTS
OF CERTAIN EIGHTH-GRADE SCIENCE PUPILS

Submitted by

Harry Joseph Kane

(B.S.Ed. Bridgewater Teachers' College, 1929)

In partial fulfillment of requirements for
the degree of Master of Education

1946

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AN THESIS INTO THE INTERESTS
OF CERTAIN HIGH-GRADE SCIENCE TUTORS

School of Education
Gift of Harry JOSEPH KANE

August 30, 1946

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Reasons for choice.-- It was chosen because of five reasons, namely: An interest in improving the present course of study, a desire to make the course more interesting and helpful to those whose interests and abilities were in other fields of endeavor or for whom the fundamentals of science were the starting place for a career, to discover total reactions of pupils in three different ability groups to the topics covered, to discover differences (if any) in reactions of boys and girls of like ability, to get reactions as to the interest and usefulness of the different methods used in teaching the subject.

Background Data.--
The town.-- The locale of the investigation was Natick, Massachusetts; fifteen miles due west of Boston. Natick has a population of fifteen thousand and a school enrolment of about twenty-two hundred. By nature it is almost entirely residential, having undergone the transition because of an

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CHAPTER I

THE PROBLEM AND METHODS USED

Statement and Reasons for Choice

The problem of the investigation.-- "How do various ability groups in a certain eighth grade react to the topics covered by the existing eighth-grade-science curriculum?" was the problem involved.

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Background Data

The town.-- The locale of the investigation was Watick,

Massachusetts; fifteen miles due west of Boston. Watick has

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exodus of diversified manufacturing to the South or West. Most of the inhabitants are American-born and many own their own homes. Nothing, general shop, and printing.

The school.-- The Coolidge Junior High School was built in 1926 at a cost of about \$300,000.00. Containing twenty-seven classrooms, it is of all brick construction and fairly well equipped. About one-third of the teachers are men. The school houses grades seven, eight, and nine with about five hundred twenty-five as a total enrolment. The Natick school system operates on the 6-3-3- plan. Junior-high-school pupils are placed according to ability in each grade and their first ability group placement is determined from a list of the graduates of each of the ten elementary schools submitted to the junior-high-school principal when school ends in June. Each list is an ability grouping on the basis of the results of the Kuhlmann-Anderson Achievement Tests administered in the elementary schools in the Spring previous to graduation. From these results an achievement quotient is derived and prospective graduates are listed accordingly. Upon receipt of these lists the junior high school principal selected the top four names from each list and assigned them to 7G, the highest ability group. There being ten elementary schools, 7G, therefore, had an initial enrolment of forty pupils. The next four pupils listed were assigned to 7F and so on down to 7B, the lowest division. Usually graduates of the town texts but used three different books in class as well as a

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special or "opportunity" class were assigned to this class in order that they might use the manual arts facilities: cooking, clothing, general shop, and printing.

Flexibility of grouping.-- Pupil assignment to an ability group was not a hard and fast affair; upward or downward transfer was made when ability warranted. At the end of the first marking term, eight weeks after school began, report card grades were inspected by the principal. Home-room teachers were invited to make recommendations for transfer. Pupils failing in two major subjects or more were moved a division lower and a division higher if they received B or A in two or more major subjects. All changes, of course, were governed by the seating capacity of the homerooms involved. Marks were based upon the normal curve of distribution and a five point system was used with no pluses or minuses. A grade of C indicated the average work of the class.

The science curriculum.-- There was no science work in grade seven except for incidental science of personal hygiene in physical education classes. Science in grade eight was required for all pupils; 3 fifty-minute periods each week with no homework. This work was intended as a foundation course for 9th grade science. Failure to accomplish a passing grade in 8th grade science did not bar a pupil from proceeding in 9th grade science. There was no outside work in eighth-grade-science. Pupils did not have individual texts but used three different books in class as well as a

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well stocked reference shelf. The school had excellent library facilities and pupils were trained to avail themselves of the material there. The course was divided into units; each of which was broken down into subtopics. Major topics were: water, air, fire, rocks and soil, plants, and health. By actual count these major units were handled under sixty-one subdivisions.

Obtaining the Reactions

Method employed and scope of questionnaire.--- The information on reactions of pupils was gathered by means of a questionnaire listing the sixty-one subtopics. This questionnaire consisted of four legal size mimeographed pages. Page one concerned itself with reactions as to the usefulness of each topic with four different choices for checking beside each topic. The four columns were captioned: very useful; useful; of very little use; and no use at all. Page two asked for reactions as to difficulty with four columns captioned: very difficult; difficult; easy; and knew it already. Page ^{three} two dealt with interest with four columns captioned: very interesting; interesting; of little interest; and disliked the topic. Page four listed the fourteen methods used by the writer in teaching the subject and pupils were asked for their reactions as to interest and usefulness with captions for each as mentioned previously. (a copy of the questionnaire used may be found in the appendix.)

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Scope of the questionnaire.-- The whole year's work was the basis for the checklist and was given three days before school ended in June, 1945. The topics were listed from the teacher's planbook according to their proper sequence. Covering the entire grade of six divisions, one hundred sixty-four pupils, required two days. Each pupil required about forty minutes although no time limit was set. Preliminary remarks were to the effect that this was a cooperative act on the part of the pupils to make the course more helpful for incoming pupils from grade seven.

Coding.-- In the preliminary printed directions pupils were told not to sign their names. Each was asked to write at the top: B or G to identify pupil as to boy or girl, the letter indicating the division, and the numeral denoting the pupil's age. A typical coding would be: GE12 meaning girl in division E and twelve years of age.

Tabulation of results.-- There being six divisions in the grade the top two, 8G and 8F were considered as the top third of the grade. 8-E and 8-D were assumed to be the middle third with 8-C and 8-B the lower third. Papers were first placed in order according to division with 8-G at the top followed by 8-F, 8-E, 8-D, 8-C, 8-B. Papers in each third were next arranged according to sex with the boys' papers first. Following this came another rearrangement according to age in diminishing order.. This was followed by a numbering of all the questionnaires consecutively from

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third were next arranged according to sex with the boys' papers first. Following this came another rearrangement

according to age in diminishing order. This was followed by a numbering of all the questionnaires consecutively from

one to one hundred sixty-four. To assist in keeping the ability groups separate a different color was used in numbering each group. A total of two hundred eleven reactions was asked each pupil. Multiplying this total by one hundred sixty-four meant the tabulation of over thirty-four thousand reactions. This was done upon a master chart ruled horizontally into one hundred sixty-four sections and vertically into seventy-five large columns the first sixty-one of which were subdivided into twelve smaller columns to provide tallying space for the reactions of usefulness, difficulty, and interest. The remaining fourteen were for reactions as to teaching method usefulness and interest. Each of these was ruled into eight smaller columns. Number of vertical columns: eight hundred forty-four. Upon completion of this, subtotals were found for each reaction in each of the three groups. These totals were then changed to percentages for each group and set up in table form. Chapter two of this paper sets forth in tabular form these figures and describes the significant features of each table shown. Table one shows the age distributions of each of the ability groups by sex.

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Table 1. Age and Ability Distributions of Eighth Grade
Science Pupils completing Questionnaires.

		Age in Years								
Ability Group		17	16	15	14	13	12	Total		
Boys	Upper Third Boys			2	9	12	1	24		
	Highest Third	0	79	21	0	4	17	75	4	17
	Upper Third Girls			1	12	19		32		
	Third	31	66	3	-	-	4	53	43	9
	Middle Third Boys	65	36	2	0	6	12	15	9	48
	sub-total	11	44	21	5	1	9	55	16	9
Girls	Middle Third Girls			1	3	17	11	32		
	Highest Third	62	22	13	5	0	9	85	6	6
	Lower Third Boys			3	7	11	2	23		
	Third	2	49	34	16	0	31	65	3	0
	Lower Third Girls	50	14	1	6	6	8	39	18	61
	sub-total	20	30	14	15	1	16	63	2	2
Total		31	74	35	20	2	25	119	18	11
Total:		1	7	25	64	64	3	164		

Although the lowest groups saw very little use in this item they found it easy. The highest third girls were the only group to consider this topic very useful. Only two in the whole grade found the material very difficult.

Table I. Age and Ability Distributions of Eighth Grade Science Pupils completing Questionnaires.

Ability Group	Age in Years					Total
	17	16	15	14	13	
Upper Third Boys			2	9	12	24
Upper Third Girls			1	12	19	32
Middle Third Boys		2	6	12	12	32
Middle Third Girls		1	3	17	11	32
Lower Third Boys		3	7	11	2	23
Lower Third Girls	1	1	6	3	5	16
Total:						
	1	7	25	64	64	161

Table 2. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Discussion of the Meaning of the Term 'Elementary Science'."

Percentages Giving Different Ratings of													
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
(1)		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	0	79	21	0	4	17	75	4	17	54	29	0
	Middle Third	31	66	3	-	-	4	53	43	9	86	5	0
	Lowest Third	-	9	65	26	0	17	83	-	9	48	43	0
	sub-total	11	44	21	5	1	9	56	16	9	54	19	0
Girls	Highest Third	60	22	13	5	0	9	85	6	6	85	9	0
	Middle Third	3	49	34	16	0	31	66	3	0	28	69	0
	Lowest Third	-	-	50	44	6	17	83	0	0	39	61	0
	sub-total	20	30	14	15	1	16	63	2	2	43	36	1
Total		31	74	35	20	2	25	119	18	11	97	55	1

Key to ratings: 4= Very Useful 4= Very Difficult 4= Very interesting
 3= useful 3= difficult 3= interesting
 2= very little use 2= easy 2= very little interest
 1= no use at all 1= knew it already 1= disliked item.

Although the lowest groups saw very little use in this item they found it easy. The highest third girls were the only group to consider this topic very useful. Only two in the whole grade found the material very difficult.

Table 2. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Discussion of the Meaning of the Term 'Elementary Science'."

Percentages Giving Different Ratings of													
Sex and Intelligence Group #		Usefulness				Difficulty				Interest			
(1)	(2)	1	2	3	4	1	2	3	4	1	2	3	4
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Boys	Highest Third	0	79	21	0	4	17	75	4	17	54	29	0
	Middle Third	31	66	3	-	4	53	43	9	86	5	0	0
	Lowest Third	-	9	65	26	0	17	83	-	9	48	43	0
	sub-total	11	44	21	5	1	9	56	16	9	54	19	0
Girls	Highest Third	60	22	13	5	0	9	85	6	6	85	9	0
	Middle Third	3	49	34	16	0	31	66	3	0	28	69	0
	Lowest Third	-	-	50	44	6	17	83	0	0	39	61	0
	sub-total	20	30	14	15	1	16	63	2	2	43	36	1
Total		31	74	35	20	2	25	119	18	11	97	55	1

Key to ratings: 4= Very Useful 4= Very Difficult 4= Very interesting
 3= useful 3= difficult 3= interesting
 2= very little use 2= easy 2= very little interest
 1= no use at all 1= knew it already 1= disliked item.

Although the lowest groups saw very little use in this item they found it easy. The highest third girls were the only group to consider this topic very useful. Only two in the whole grade found the material very difficult.

Table 3. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Possible Content of a General Science Course."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	54	46	0	0	29	46	25	0	42	54	4	0
	Middle Third	6	80	14	0	0	12	74	14	20	74	6	0
	Lowest Third	0	13	87	0	0	13	87	0	0	39	61	0
	sub-total	15	42	25	0	7	18	52	5	17	48	18	0
Girls	Highest Third	53	44	3	0	0	12	82	6	38	50	9	0
	Middle Third	3	82	13	0	0	22	78	0	9	85	6	0
	Lowest Third	0	11	72	17	0	11	89	0	0	56	44	0
	sub-total	18	42	18	3	0	13	67	2	15	53	13	0
Total:		33	84	43	3	7	31	119	7	32	101	31	0

About half the grade decided that this material was useful. Nearly three-fourths of the grade found the work easy. There is a very close agreement between the boys and girls as to numbers of pupils checking each rating.

pupils checking each rating.
 very close agreement between the boys and girls as to numbers of
 Nearly three-fourths of the grade found the work easy. There is a
 About half the grade decided that this material was useful.

Sex and Intelligence Group	Usefulness				Difficulty				Interest			
	# (1)	3 (2)	4 (3)	5 (4)	# (1)	2 (2)	3 (3)	4 (4)	# (1)	2 (2)	3 (3)	4 (4)
Boys	Highest Third	54	46	0	0	29	46	25	0	42	54	4
	Middle Third	6	80	14	0	0	12	74	14	20	74	6
	Lowest Third	0	13	87	0	0	13	87	0	0	39	61
	sub-total	15	42	25	0	7	18	52	2	17	48	18
Girls	Highest Third	53	44	3	0	0	12	82	6	38	50	9
	Middle Third	3	82	13	0	0	22	78	0	9	82	6
	Lowest Third	0	11	72	17	0	11	89	0	0	56	44
	sub-total	18	42	18	3	0	13	67	2	15	53	13
Total:		33	84	43	3	7	31	119	7	32	101	31

Science Course."

and Interest of the topic: "Possible Content of a General
 Ability Levels Concerning the Usefulness, Difficulty,

Table 3. Opinions of Eighth-grade Boys and Girls of Different
 9

Table 4. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Chemical Makeup of Water."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	46	50	4	0	25	50	8	17	8	42	50	0
	Middle Third	0	69	31	0	0	31	60	9	9	63	25	3
	Lowest Third	0	22	78	0	0	35	65	0	0	87	13	0
	sub-total	11	41	31	0	6	31	38	6	5	52	26	1
Girls	Highest Third	19	47	28	0	19	56	22	3	34	56	6	0
	Middle Third	0	40	60	0	0	28	72	0	0	34	63	3
	Lowest Third	0	22	78	0	0	0	83	17	0	72	28	0
	sub-total	6	32	42	0	6	27	45	4	11	41	27	1
Total:		17	73	73	0	12	58	83	10	16	93	53	2

A very close agreement between the sexes is apparent. It is hard to understand, however, why upper ability groups should find the work very difficult while the other groups find it easy. All groups found some use for the topic. Greatest agreement was on interest.

A very close agreement between the sexes is apparent. It is hard to understand, however, why upper ability groups should find the work very difficult while the other groups find it easy. All groups found some use for the topic. Greatest agreement was on interest.

Sex and Intelligence Group	Usefulness				Difficulty				Interest			
	#	1	2	3	#	1	2	3	#	1	2	3
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	46	50	4	0	25	50	8	17	8	42	50
	Middle Third	0	69	31	0	31	60	9	9	63	25	3
	Lowest Third	0	22	78	0	32	62	0	0	87	13	0
	sub-total	11	41	31	0	6	31	38	6	52	26	1
Girls	Highest Third	19	47	28	0	19	26	22	3	34	26	6
	Middle Third	0	40	60	0	28	72	0	0	34	63	3
	Lowest Third	0	22	78	0	0	83	17	0	72	28	0
	sub-total	6	32	42	0	6	27	45	4	11	41	27
Total:		17	73	73	0	12	58	83	10	16	93	23

Percentages Giving Different Ratings of

Makeup of Water."

and Interest of the topic: "A Study of the Chemical

Ability Levels Concerning the Usefulness, Difficulty,

Table #. Opinions of Eighth-grade Boys and Girls of Different

Table 5. Opinions of Eighth-grade Boys and Girls of Different Ability Levels concerning the Usefulness, Difficulty, and Interest of the topic: "A Study and Discussion of Matter as a Universal Ingredient."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	50	21	4	0	42	50	8	13	75	12	0
	Middle Third	14	69	14	3	17	49	21	13	14	72	14	0
	Lowest Third	0	22	78	0	0	26	74	0	0	35	65	0
	sub-total	11	41	28	2	6	33	36	2	8	51	23	0
Girls	Highest Third	28	60	6	6	6	41	47	6	34	47	16	3
	Middle Third	0	60	40	0	0	13	87	0	0	66	34	0
	Lowest Third	0	17	83	0	0	11	89	0	0	17	78	5
	sub-total	9	41	29	1	2	19	59	1	11	39	26	2
Total		20	82	57	3	8	52	95	3	19	90	49	2

Only upper groups found this very useful. Three-fourths of all the girls found the item easy. The work was more interesting to upper groups than to lower.

Table 5. Opinions of Eighth-Grade Boys and Girls of Different Ability Levels concerning the Usefulness, Difficulty, and Interest of the topic: "A Study and Discussion of Matter as a Universal Ingredient."

Percentages Giving Different Ratings of												
(1)	Sex and Intelligence Group			Usefulness			Difficulty			Interest		
	#	%	(2)	#	%	(3)	#	%	(4)	#	%	(5)
Boys	sub-total	11	41	2	6	33	3	36	2	8	51	63
	Lowest Third	0	22	78	0	26	74	0	0	0	32	62
	Middle Third	14	69	14	3	17	49	21	13	14	72	14
	Highest Third	25	50	21	4	0	42	50	8	13	72	12
Girls	sub-total	9	41	29	1	2	19	59	1	11	39	26
	Lowest Third	0	11	83	0	0	11	89	0	0	11	78
	Middle Third	0	60	40	0	0	13	67	0	0	66	34
	Highest Third	28	60	6	6	6	41	47	6	34	47	16
Total	20	82	71	3	8	52	55	3	19	20	49	2

Only upper groups found this very useful. Three-fourths of all the girls found the item easy. The work was more interesting to upper groups than to lower.

Table 6. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Experimentation to Discover the Different Forms of Matter."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	33	58	9	0	4	42	50	4	17	67	16	0
	Middle Third	0	20	60	20	19	69	12	0	0	29	66	5
	Lowest Third	0	26	74	0	4	83	13	0	0	78	22	0
	sub-total	8	28	40	6	8	63	19	1	4	44	33	2
Girls	Highest Third	34	60	6	0	6	31	44	19	25	63	12	0
	Middle Third	0	19	72	9	0	72	28	0	0	82	18	0
	Lowest Third	0	0	72	28	0	11	83	6	6	83	11	0
	sub-total	11	25	38	7	2	35	38	6	9	61	12	0
Total:		19	53	78	13	10	88	57	7	13	105	45	2

Greatest agreement is found on difficulty and interest with a
 The upper level found the item very useful or useful. Almost
 half the grade found very little use in the work. Majority agreed
 that the activity was interesting although difficult.

The upper level found the item very useful or useful. Almost half the grade found very little use in the work. Majority agreed that the activity was interesting although difficult.

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	33	58	9	0	4	42	50	4	17	67	16	0
	Middle Third	0	20	60	20	12	69	12	0	0	29	66	5
	Lowest Third	0	26	74	0	4	83	13	0	0	78	22	0
	sub-total	8	28	40	6	8	63	19	1	4	44	33	5
Girls	Highest Third	34	60	6	0	6	31	44	19	25	63	12	0
	Middle Third	0	19	72	9	0	72	28	0	0	82	18	0
	Lowest Third	0	72	28	0	0	11	83	6	6	83	11	0
	sub-total	11	25	38	7	2	35	38	6	9	61	12	0
Total:		19	53	78	13	10	88	57	7	13	105	48	5

the Different Forms of Matter."

and Interest of the topic: "Experimentation to Discover

Ability Levels Concerning the Usefulness, Difficulty,

Table 6. Opinions of Eighth-Grade Boys and Girls of Different

Table 7. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Demonstrations of Indestructibility of Matter."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	54	17	0	4	8	88	0	8	58	34	0
	Middle Third	20	63	12	5	0	43	57	0	6	71	23	0
	Lowest Third	26	57	17	0	0	16	84	0	0	25	75	0
	sub-total	15	52	12	2	1	21	60	0	4	47	31	0
Girls	Highest Third	66	31	3	0	0	3	88	9	31	69	0	0
	Middle Third	0	37	63	0	0	57	43	0	3	71	29	0
	Lowest Third	0	11	78	11	0	11	78	11	0	39	61	0
	sub-total	21	25	35	2	0	23	54	4	11	54	17	0
Total		36	77	47	4	1	44	114	4	15	101	48	0

Greatest agreement is found on difficulty and interest with a majority deciding easy but interesting. Noone, however, disliked the topic.

topic. majority deciding easy but interesting. Moore, however, disliked the Greatest agreement is found on difficulty and interest with a

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	54	17	0	4	8	88	0	8	58	34	0
	Middle Third	20	63	12	5	0	43	57	0	6	71	23	0
	Lowest Third	26	57	17	0	0	16	84	0	0	25	75	0
	sub-total	15	52	12	5	1	21	60	0	4	47	31	0
Girls	Highest Third	66	31	3	0	0	3	88	9	31	69	0	0
	Middle Third	0	37	63	0	0	57	43	0	3	71	29	0
	Lowest Third	0	11	78	11	0	11	78	11	0	39	61	0
	sub-total	21	25	35	2	0	23	54	4	11	54	17	0
Total		36	77	47	4	1	44	114	4	15	101	48	0

Percentages Giving Different Ratings of

Table 7. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Demonstrations of Indestructibility of Matter."

Table 8. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study and Demonstrations of Water's Part in Maintaining Life."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	54	4	4	0	17	71	12	33	54	13	0
	Middle Third	43	57	0	0	0	17	83	0	0	14	86	0
	Lowest Third	4	83	13	0	0	4	87	9	0	17	83	0
	sub-total	25	43	4	1	0	11	66	4	8	22	51	0
Girls	Highest Third	31	63	6	0	0	19	75	6	6	82	12	0
	Middle Third	16	75	9	0	0	28	69	3	0	13	87	0
	Lowest Third	0	28	67	5	0	11	78	11	0	22	78	0
	sub-total	15	49	16	1	0	17	60	5	2	34	45	0
Total		40	92	20	2	0	28	126	9	10	56	96	0

The tabulation shows a very close agreement of opinion with the largest majority voting easy. Nothing else of significance is shown.

The tabulation shows a very close agreement of opinion with the largest majority voting easy. Nothing else of significance is shown.

Sex and Intelligence Group	(1)	Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		# 3	# 2	# 1	(5)	# 4	# 3	# 2	# 1	# 4	# 3	# 2	# 1
Boys	Highest Third	38	54	4	0	17	71	12	33	54	13	0	
	Middle Third	43	57	0	0	17	83	0	0	14	86	0	
	Lowest Third	4	83	13	0	4	87	9	0	17	83	0	
	sub-total	25	43	4	1	0	11	66	4	8	22	21	0
Girls	Highest Third	31	63	6	0	0	19	75	6	6	82	12	0
	Middle Third	16	75	9	0	0	28	69	3	0	13	87	0
	Lowest Third	0	28	67	5	0	11	78	11	0	22	78	0
	sub-total	15	49	16	1	0	17	60	5	2	34	45	0
Total		40	92	20	2	0	28	126	9	10	56	96	0

Table 8. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study and Demonstrations of Water's Part in Maintaining Life."

Table 9. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Classroom Experiments and Study of Wayer in Plant Foodmaking."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (6)	3 (7)	2 (8)	1 (9)	4 (10)	3 (11)	2 (12)	1 (13)
(1)													
Boys	Highest Third	25	58	12	5	17	54	29	0	46	37	17	0
	Middle Third	0	20	80	0	0	14	69	14	3	63	20	14
	Lowest Third	17	83	0	0	0	70	30	0	4	13	70	13
	Sub-total	10	40	30	1	4	34	36	6	13	34	27	8
Girls	Highest Third	16	63	18	3	0	25	75	0	44	56	0	0
	Middle Third	9	41	50	0	3	75	22	0	0	22	78	0
	Lowest Third	0	22	72	6	0	56	44	0	0	22	72	6
	Sub-total	8	37	32	2	1	42	38	0	14	27	38	1
Total		18	77	62	3	5	76	74	0	27	61	65	9

Upper groups found greater interest in this item. Opinions bunched up in second and third ratings for usefulness, difficulty, and interest. Dislike was found only in lower ability groups.

Interest. Dislike was found only in lower ability groups. Upper groups found greater interest in this item. Opinions

punched up in second and third ratings for usefulness, difficulty, and

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4 (5)	3 (4)	2 (3)	1 (2)	4 (5)	3 (4)	2 (3)	1 (2)	4 (5)	3 (4)	2 (3)	1 (2)
Boys	Highest Third	25	58	12	5	17	54	29	0	46	37	17	0
	Middle Third	0	20	80	0	0	14	69	14	3	63	20	14
	Lowest Third	17	83	0	0	0	70	30	0	4	13	70	13
	Sub-total	10	40	30	1	4	34	36	6	13	34	27	8
Girls	Highest Third	16	63	18	3	0	25	75	0	44	56	0	0
	Middle Third	9	41	50	0	3	75	25	0	0	22	78	0
	Lowest Third	0	22	78	6	0	26	44	0	0	22	78	6
	Sub-total	8	37	32	2	1	42	38	0	14	27	38	1
Total		18	77	62	3	5	76	74	0	27	61	65	9

Percentages Giving Different Ratings of

Study of Weyer in Plant Foodmaking." and Interest of the topic: "Classroom Experiments and Ability Levels Concerning the Usefulness, Difficulty,

Table 10. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Working of Nature's Water Cycle."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
(1)		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	58	17	0	0	50	46	4	17	54	17	12
	Middle Third	0	12	74	14	0	14	71	15	23	71	6	0
	Lowest Third	0	9	70	21	0	0	78	22	0	26	70	4
	Sub-total	6	20	46	10	0	17	54	11	12	44	22	2
Girls	Highest Third	6	85	6	0	0	66	34	0	13	82	5	0
	Middle Third	0	16	84	0	0	3	53	44	0	50	50	0
	Lowest Third	0	22	72	6	0	28	44	28	0	11	72	17
	Sub-total	2	36	41	1	0	27	35	19	4	44	30	3
Total		8	56	87	11	0	44	89	30	16	88	52	5

Greatest difficulty with this item was found in the highest groups.

A great majority of the lowest groups found little interest in the work although no one found the work very difficult.

Table 10. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Working of Nature's Water Cycle."

Sex and Intelligence Group	(1)	Usefulness			Difficulty			Interest		
		4	3	2	4	3	2	4	3	2
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Boys	Highest Third	25	58	17	0	0	50	46	4	17
	Middle Third	0	18	74	14	0	14	71	15	23
	Lowest Third	0	9	70	21	0	0	78	22	0
	Sub-total	6	80	46	10	0	17	54	11	12
Girls	Highest Third	6	85	6	0	0	66	34	0	13
	Middle Third	0	16	84	0	0	3	23	44	0
	Lowest Third	0	22	78	6	0	28	44	28	0
	Sub-total	2	36	41	1	0	27	35	19	4
Total		8	56	84	11	0	44	89	30	16
		2	30	44	4	0	44	30	88	22

although no one found the work very difficult. A great majority of the lowest groups found little interest in the work. Greatest difficulty with this item was found in the highest groups.

Table 11. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study and Discussion of the Sun." *Lesson in Other Heavenly Bodies.*

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	42	54	4	0	13	54	33	0	38	62	0	0
	Middle Third	0	23	63	14	6	83	11	0	12	86	2	0
	Lowest Third	0	13	78	0	9	70	21	0	26	74	0	0
	Sub-total	10	26	41	5	7	58	17	0	19	63	1	0
Girls	Highest Third	28	72	0	0	13	78	9	0	75	25	0	0
	Middle Third	0	16	75	0	72	28	0	0	75	19	0	0
	Lowest Third	0	0	78	22	6	61	33	0	11	78	11	0
	Sub-total	9	29	39	4	28	44	8	0	50	26	2	0
Total		19	55	80	9	35	102	25	0	69	89	3	0

Although a majority found the work difficult, almost as many saw little use for the material but found it interesting. Greater difficulty was found by the middle third girls.

Table 11. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study and Discussion of the Sun."

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	42	54	4	0	13	54	33	0	38	62	0	0
	Middle Third	0	23	63	14	6	83	11	0	12	86	2	0
	Lowest Third	0	13	78	0	2	70	21	0	26	74	0	0
	Sub-total	10	26	41	5	7	58	17	0	19	63	1	0
Girls	Highest Third	28	72	0	0	13	78	9	0	75	25	0	0
	Middle Third	0	16	75	0	72	28	0	0	75	19	0	0
	Lowest Third	0	0	78	22	6	61	33	0	11	78	11	0
	Sub-total	28	39	39	4	28	44	8	0	50	26	2	0
Total		19	55	80	9	35	102	25	0	69	89	3	0

Although a majority found the work difficult, almost as many saw little use for the material but found it interesting. Greater difficulty was found by the middle third girls.

Table 12. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Earth and Its Relation to Other Heavenly Bodies."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	50	50	0	0	0	25	67	8	50	42	0	0
	Middle Third	63	31	3	0	0	14	74	12	23	74	3	0
	Lowest Third	4	52	39	5	0	22	48	0	0	83	0	0
	Sub-total	35	35	10	1	0	15	61	6	24	55	1	0
Girls	Highest Third	88	12	0	0	63	31	6	0	53	47	0	0
	Middle Third	22	75	3	0	0	28	72	0	9	78	9	4
	Lowest Third	0	50	50	0	0	11	83	6	22	67	11	0
	Sub-total	35	37	10	0	20	21	38	1	24	51	4	1
Total		70	72	20	1	20	36	99	7	48	106	5	1

Only the upper level girls considered this work very difficult.

Majorities considered the item easy but interesting.

Table 12. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Earth and Its Relation to Other Heavenly Bodies."

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	50	50	0	0	0	25	67	8	50	42	0	0
	Middle Third	63	31	3	0	0	14	74	12	23	74	3	0
	Lowest Third	4	52	39	5	0	22	48	0	0	83	0	0
	Sub-total	35	32	10	1	0	12	61	6	24	22	1	0
Girls	Highest Third	88	12	0	0	0	63	31	6	0	23	47	0
	Middle Third	22	75	3	0	0	28	72	0	9	78	9	4
	Lowest Third	0	50	50	0	0	11	83	6	22	67	11	0
	Sub-total	35	37	10	0	0	21	38	1	24	21	4	1
Total		70	72	20	1	0	36	99	7	48	106	5	1

Majorities considered the item easy but interesting. Only the upper level girls considered this work very difficult.

Table 13. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Moon and Its Effects Upon the Earth."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	29	54	17	0	0	8	83	9	58	33	9	0
	Middle Third	0	6	69	25	0	9	74	17	3	80	17	0
	Lowest Third	0	17	78	5	0	39	61	0	0	70	30	0
	Sub-total	7	19	46	10	0	14	60	7	15	52	15	0
Girls	Highest Third	6	50	44	0	0	3	60	37	0	22	72	6
	Middle Third	0	9	78	13	0	3	69	28	0	53	47	0
	Lowest Third	0	22	72	6	0	33	67	0	0	78	22	0
	Sub-total	2	23	52	5	0	8	53	19	0	38	41	1
Total -		9	42	98	15	0	22	113	26	15	90	56	1

Half the upper third boys considered this item very interesting. All groups found it easy although a majority considered it of little use.

All groups found it easy although a majority considered it of little
 Half the upper third boys considered this item very interesting.

Sex and Intelligence Group	(1)	Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		1 (2)	2 (3)	3 (4)	4 (5)	1 (6)	2 (7)	3 (8)	4 (9)	1 (10)	2 (11)	3 (12)	4 (13)
Boys	Highest Third	29	54	17	0	0	8	83	9	58	33	9	0
	Middle Third	0	6	69	25	0	9	74	17	3	80	17	0
	Lowest Third	0	17	78	5	0	39	61	0	0	70	30	0
	Sub-total	7	19	46	10	0	14	60	7	15	52	15	0
Girls	Highest Third	6	50	44	0	0	3	60	37	0	22	72	6
	Middle Third	0	9	78	13	0	3	69	28	0	53	47	0
	Lowest Third	0	22	72	6	0	33	67	0	0	78	22	0
	Sub-total	2	23	52	5	0	8	53	19	0	38	41	1
Total -		9	42	98	15	0	22	113	26	15	90	56	1

Table 13. Opinions of Eighth-grade Boys and Girls of Different
 Ability Levels Concerning the Usefulness, Difficulty,
 and Interest of the topic: "A Study of the Moon and
 Its Effects Upon the Earth."

Table 14. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Other Planets."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	46	50	4	0	0	33	63	4	38	42	13	7
	Middle Third	0	26	74	0	6	91	3	0	3	78	16	3
	Lowest Third	0	4	70	26	0	70	30	0	0	22	78	0
	Sub-total	12	14	34	3	2	53	25	1	10	40	27	5
Girls	Highest Third	0	75	25	0	0	31	63	0	16	84	0	0
	Middle Third	0	56	41	0	0	71	29	0	0	41	53	6
	Lowest Third	0	6	78	16	0	44	56	0	0	22	67	11
	Sub-total	0	35	35	1	0	43	37	0	5	43	29	4
Total		12	49	69	4	2	96	62	1	15	83	56	9

The same opinion of usefulness by upper third boys is shown here as in the previous table. There is a close agreement in numbers of pupils choosing the other ratings.

choosing the other ratings. in the previous table. There is a close agreement in numbers of pupils The same opinion of usefulness by upper third boys is shown here as

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	46	50	4	0	0	33	63	4	38	42	13	7
	Middle Third	0	26	74	0	6	91	3	0	3	78	16	3
	Lowest Third	0	4	70	26	0	70	30	0	0	22	78	0
	Sub-total	12	14	34	3	2	53	25	1	10	40	27	2
Girls	Highest Third	0	75	25	0	0	31	63	0	16	84	0	0
	Middle Third	0	26	41	0	0	71	29	0	0	41	53	6
	Lowest Third	0	6	78	16	0	44	26	0	0	22	67	11
	Sub-total	0	35	35	1	0	43	37	0	2	43	29	4
Total		12	49	69	4	2	96	62	1	12	83	26	9

Percentages Giving Different Ratings of

Table 14. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Other Planets."

Table 15. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study and Discussion of the Content and Behavior of the Atmosphere."

Percentages Giving Different Ratings of

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	33	67	0	0	0	38	58	4	13	67	20	0
	Middle Third	26	74	0	0	17	83	0	0	0	23	71	6
	Lowest Third	0	26	74	0	0	48	44	8	0	30	70	0
	Sub-total	17	31	17	0	6	49	28	3	3	31	45	2
Girls	Highest Third	3	44	38	15	0	19	75	0	16	69	15	0
	Middle Third	0	44	56	0	22	69	9	0	0	28	63	9
	Lowest Third	0	17	56	27	0	17	78	5	0	33	67	0
	Sub-total	1	31	29	10	7	31	40	1	5	37	33	2
Total		18	62	46	10	13	80	68	4	8	68	78	4

Upper and middle third boys consider the item more useful than do the girls although middle group boys and girls considered the work difficult. Only upper groups voted the item interesting.

girls found the item very interesting although no one judged the work useless, very difficult, or disliked it.

Table 15. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study and Discussion of the Content and Behavior of the Atmosphere."

Percentages Giving Different Ratings of												
Sex and Intelligence Group		Usefulness				Difficulty				Interest		
		4	3	2	1	4	3	2	1	4	3	2
		(5)	(4)	(3)	(2)	(5)	(4)	(3)	(2)	(5)	(4)	(3)
Boys	Highest	33	67	0	0	0	38	58	4	13	67	20
	Third	26	74	0	0	17	83	0	0	0	23	77
	Middle	0	26	74	0	0	48	44	8	0	30	70
	Lowest	17	31	17	0	6	49	28	3	3	31	45
Sub-total		17	31	17	0	6	49	28	3	3	31	45
Girls	Highest	3	44	38	15	0	19	75	0	16	69	15
	Third	0	44	56	0	22	69	9	0	0	28	63
	Middle	0	17	56	27	0	17	78	5	0	33	67
	Lowest	1	31	29	10	7	31	40	1	5	37	33
Sub-total		1	31	29	10	7	31	40	1	5	37	33
Total		18	62	46	10	13	80	68	4	8	68	78

Upper and middle third boys consider the item more useful than do the girls although middle group boys and girls considered the work difficult. Only upper groups voted the item interesting.

Table 16. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Effects of Air Pressure."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	75	25	0	0	0	79	21	0	54	33	13	0
	Middle Third	9	88	3	0	0	75	25	0	13	75	12	0
	Lowest Third	4	61	35	0	0	74	25	0	13	83	14	0
	Sub-total	22	48	12	0	0	64	18	0	18	57	5	0
Girls	Highest Third	28	63	9	0	0	38	62	0	82	18	0	0
	Middle Third	6	69	25	0	0	69	31	0	12	69	19	0
	Lowest Third	0	17	83	0	0	33	67	0	0	56	44	0
	Sub-total	11	47	13	0	0	42	40	0	30	40	12	0
Total -		33	95	25	0	0	106	58	0	48	97	17	0

Upper third boys found this subject very useful and very interesting. Lower third girls saw little use in the material. More boys than girls found the work difficult. Among the girls most of the upper third girls found the item very interesting although no one judged the work useless, very difficult, or disliked it.

Table 16. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Effects of Air Pressure."

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		1	2	3	4	1	2	3	4	1	2	3	4
		(5)	(4)	(3)	(2)	(5)	(4)	(3)	(2)	(5)	(4)	(3)	(2)
Boys	Highest Third	75	25	0	0	0	79	21	0	54	33	13	0
	Middle Third	9	88	3	0	0	75	25	0	13	75	12	0
	Lowest Third	4	61	35	0	0	74	25	0	13	83	14	0
	Sub-total	22	48	12	0	0	64	18	0	18	57	5	0
Girls	Highest Third	28	63	9	0	0	38	62	0	82	18	0	0
	Middle Third	6	69	25	0	0	69	31	0	12	69	19	0
	Lowest Third	0	17	83	0	0	33	67	0	0	56	44	0
	Sub-total	11	47	13	0	0	42	40	0	30	40	12	0
Total -		33	95	25	0	0	106	58	0	48	97	17	0

Upper third boys found this subject very useful and very interesting. Lower third girls saw little use in the material. More boys than girls found the work difficult. Among the girls most of the upper third girls found the item very interesting although no one judged the work useless, very difficult, or disliked it.

Table 17. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study and Experimentation of the Role of Air in Supporting Combustion."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	17	75	8	0	0	29	63	8	17	71	12	0
	Middle Third	17	80	3	0	0	23	71	6	20	80	0	0
	Lowest Third	0	35	65	0	26	70	4	0	4	83	13	0
	Sub-total	10	54	17	0	6	31	41	5	12	64	6	0
Girls	Highest Third	16	84	0	0	0	16	82	2	13	75	12	0
	Middle Third	16	75	0	0	9	41	44	6	0	44	56	0
	Lowest Third	0	6	56	38	44	86	0	0	17	83	0	0
	Sub-total	10	52	13	7	11	28	40	2	7	63	12	0
Total -		20	106	30	7	17	59	81	7	19	127	18	0

Here we find not only very close agreement among sexes of each ability group, but also a similar likeness of opinion between the boys and girls of the entire grade. Decided majorities voted the work very useful and interesting.

useful and interesting.

and girls of the entire grade. Decided majorities voted the work very ability group, but also a similar likeness of opinion between the boys Here we find not only very close agreement among sexes of each

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(5)	(3)	(4)	(2)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	17	75	8	0	0	29	63	8	17	71	12	0
	Middle Third	17	80	3	0	0	23	71	6	20	80	0	0
	Lowest Third	0	35	65	0	26	70	4	0	4	83	13	0
	Sub-total	10	54	17	0	6	31	41	5	12	64	6	0
Girls	Highest Third	16	84	0	0	0	16	82	2	13	75	12	0
	Middle Third	16	75	0	0	9	41	44	6	0	44	56	0
	Lowest Third	0	6	56	38	44	86	0	0	17	83	0	0
	Sub-total	10	52	13	7	11	28	40	2	7	63	12	0
Total -		20	106	30	7	17	59	81	7	19	127	18	0

Percentages Giving Different Ratings of

of the Role of Air in Supporting Combustion." and Interest of the topic: "Study and Experimentation Ability Levels Concerning the Usefulness, Difficulty, Table 17. Opinions of Eighth-grade Boys and Girls of Different

Table 18. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Classroom Experiments in Preparing and Discovering Qualities of Oxygen."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	33	50	17	0	0	63	33	4	54	29	17	0
	Middle Third	6	37	57	0	40	53	7	0	14	86	0	0
	Lowest Third	0	39	61	0	30	70	0	0	9	70	21	0
	Sub-total	10	34	38	0	21	50	10	1	20	53	9	0
Girls	Highest Third	0	66	34	0	75	25	0	0	19	72	9	0
	Middle Third	0	44	53	3	19	78	3	0	22	75	3	0
	Lowest Third	0	17	83	0	39	61	0	0	6	88	6	0
	Sub-total	0	38	42	1	37	44	1	0	14	63	5	0
Total -		10	72	80	1	58	94	11	1	34	116	14	0

Highest opinions of the usefulness of this topic are held by upper third groups with greatest difficulty being experienced by upper third girls. In all other choices we see a close agreement among the groups and sexes.

third girls. In all other choices we see a close agreement among the third groups with greatest difficulty being experienced by upper

Highest opinions of the usefulness of this topic are held by upper

Sex and Intelligence Group	Usefulness			Difficulty			Interest						
	4	3	2	4	3	2	4	3	2				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
Boys	Highest Third	38	50	17	0	0	53	33	4	54	29	17	0
	Middle Third	6	37	27	0	40	23	7	0	14	86	0	0
	Lowest Third	0	39	61	0	30	70	0	0	2	70	21	0
	Sub-total	44	86	38	0	70	50	10	1	60	23	9	0
Girls	Highest Third	0	55	34	0	75	25	0	0	19	75	9	0
	Middle Third	0	44	53	3	19	78	3	0	22	75	3	0
	Lowest Third	0	17	83	0	39	61	0	0	6	88	6	0
	Sub-total	0	38	48	1	37	44	1	0	14	63	5	0
Total -	44	102	78	1	58	94	11	1	34	75	14	0	

Table 19. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty and Interest of the topic: "Experiments to Discover Behavior of Air Around a Fire."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	75	0	0	0	13	83	4	29	46	25	0
	Middle Third	3	57	34	6	3	71	26	0	9	82	9	0
	Lowest Third	13	52	35	0	17	78	5	0	13	74	13	0
	Sub-total	10	50	20	2	5	46	31	1	13	55	14	0
Girls	Highest Third	13	72	15	0	0	38	62	0	19	72	9	0
	Middle Third	16	84	0	0	9	75	16	0	19	78	3	0
	Lowest Third	0	39	61	0	17	78	5	0	6	78	16	0
	Sub-total	9	57	14	0	6	50	21	0	13	62	7	0
Total -		19	109	34	2	11	96	52	1	26	117	21	0

All groups and both sexes are very much in agreement^{on} this item with majorities deciding: Useful, difficult, and interesting.

Table 19. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty and Interest of the topic: "Experiments to Discover Behavior of Air Around a Fire."

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		1	2	3	4	1	2	3	4	1	2	3	4
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest	25	75	0	0	0	13	83	4	29	46	25	0
	Third	3	57	34	6	3	71	26	0	9	82	9	0
	Middle	13	52	35	0	17	78	5	0	13	74	13	0
	Lowest	10	50	20	2	5	46	31	1	13	55	14	0
	Sub-total	13	72	15	0	0	38	62	0	19	72	9	0
Girls	Highest	16	84	0	0	9	75	16	0	19	78	3	0
	Third	0	39	61	0	17	78	5	0	6	78	16	0
	Middle	9	57	14	0	6	50	21	0	13	62	7	0
	Lowest	19	109	34	2	11	96	52	1	26	117	21	0
	Sub-total	13	72	15	0	0	38	62	0	19	72	9	0
Total -		13	72	15	0	0	38	62	0	19	72	9	0

All groups and both sexes are very much in agreement on this item with majorities deciding: Useful, difficult, and interesting.

Table 20. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Classroom Compilation of Rules for Safety in Regard to Control of a Fire."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	54	42	4	0	33	50	4	13	17	63	20	0
	Middle Third	29	71	0	0	3	23	71	3	12	80	8	0
	Lowest Third	0	26	74	0	0	17	66	17	0	65	35	0
	Sub-total	23	42	17	0	9	24	42	8	8	58	15	0
Girls	Highest Third	56	38	6	0	3	41	56	0	25	72	3	0
	Middle Third	3	50	47	0	0	41	56	3	13	72	15	0
	Lowest Third	0	17	83	0	0	83	17	0	0	13	83	0
	Sub-total	19	31	32	0	1	41	38	1	12	49	21	0
Total -		42	73	49	0	10	65	80	9	20	107	36	0

Highest opinions of usefulness were held by upper third groups with lowest opinions found in the lower third. This work presented the greatest difficulty to upper third boys. Least interest was found by lower third girls.

by lower third girls. the greatest difficulty to upper third boys. Least interest was found with lowest opinions found in the lower third. This work presented Highest opinions of usefulness were held by upper third groups

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		# (2)	3 (3)	2 (4)	1 (5)	# (6)	3 (7)	2 (8)	1 (9)	# (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	24	42	4	0	33	50	4	13	17	63	20	0
	Middle Third	29	71	0	0	3	23	71	3	12	80	8	0
	Lowest Third	0	26	74	0	0	17	66	17	0	62	32	0
	Sub-total	53	113	78	0	36	123	75	30	29	142	40	0
	Highest Third	56	38	6	0	3	41	56	0	25	72	3	0
Girls	Middle Third	3	50	47	0	0	41	56	3	13	72	15	0
	Lowest Third	0	17	83	0	0	83	17	0	0	13	83	0
	Sub-total	59	105	140	0	3	171	129	3	28	157	91	0
	Total -	112	218	218	0	39	404	204	33	57	299	131	0
	Highest Third	56	38	6	0	3	41	56	0	25	72	3	0

Percentages Giving Different Ratings of

Rules for Safety in Regard to Control of a Fire. and Interest of the topic: "Classroom Compilation of Ability Levels Concerning the Usefulness, Difficulty, and Interest of Eight-grade Boys and Girls of Different

Table 21. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Elements as the Ingredients of Substances."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Group	25	67	8	0	0	79	21	0	29	63	8	0
	Middle Third	0	9	66	25	60	37	3	0	0	17	77	6
	Lowest Third	0	0	22	78	70	30	0	0	0	57	43	0
	Sub-total	6	19	30	27	28	48	5	0	7	34	38	2
Girls	Highest Third	25	66	6	3	31	60	9	0	28	53	16	3
	Middle Third	0	0	31	69	66	34	0	0	0	31	69	0
	Lowest Third	0	0	22	78	11	89	0	0	0	50	50	0
	Sub-total	8	21	15	37	33	46	2	0	9	36	36	1
Total -		14	40	45	64	61	94	7	0	16	70	74	3

Only upper ability groups judged this material of any great usefulness. Lower groups considered the item of no use at all. One fact stands clear: that lowest third girls experienced less difficulty than middle group girls. Almost half the grade considered the topic useless and difficult.

Table 21. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Elements as the Ingredients of Substances."

Percentages Giving Different Ratings of												
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest		
		4	3	2	1	4	3	2	1	4	3	2
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<hr/>												
Boys	Highest Group	25	67	8	0	0	79	21	0	29	63	8
	Middle Third	0	9	66	25	60	37	3	0	0	17	77
	Lowest Third	0	0	22	78	70	30	0	0	0	27	43
	Sub-total	6	19	30	27	28	48	2	0	7	34	38
<hr/>												
Girls	Highest Third	25	66	6	3	31	60	9	0	28	53	16
	Middle Third	0	0	31	69	66	34	0	0	0	31	69
	Lowest Third	0	0	22	78	11	89	0	0	0	20	20
	Sub-total	8	21	12	37	33	46	2	0	9	36	36
<hr/>												
Total - 14		14	40	42	64	61	94	7	0	16	70	74

Only upper ability groups judged this material of any great usefulness. Lower groups considered the item of no use at all. One fact stands clear: that lowest third girls experienced less difficulty than middle group girls. Almost half the grade considered the topic useless and difficult.

Table 22. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Importance of Proper Humidity in the Home."

		Percentages Giving Different Ratings of											
Sex and Intelligence group		Usefulness				Difficulty				Interest			
(1)		4 (2)	3 (3)	2 (4)	1 (5)	4 (6)	3 (7)	2 (8)	1 (9)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	25	63	12	0	0	26	75	0	17	66	17	0
	Middle Third	29	71	0	0	6	80	14	0	0	31	66	0
	Lowest Third	0	13	65	22	39	61	0	0	0	52	48	0
	Sub-total	16	43	16	5	11	48	23	0	4	38	39	0
Girls	Highest Third	34	66	0	0	0	22	60	18	50	50	0	0
	Middle Third	0	38	56	6	41	59	0	0	0	9	78	13
	Lowest Third	0	0	22	78	0	78	17	5	11	72	17	0
	Sub-total	11	33	22	15	14	40	22	5	18	30	28	3
Total -		27	76	38	20	25	88	45	5	22	68	67	3

Highest ability groups found this most useful, easy and interesting. Heavy majorities of each sex favored second and third ratings of usefulness, difficulty, and interest.

Table 23. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Construction of a Hygrometer to Determine Home Humidity."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	54	21	0	8	50	42	0	4	46	46	4
	Middle Third	3	83	14	0	0	26	69	0	12	80	8	0
	Lowest Third	0	35	65	0	22	74	0	0	4	57	39	0
	Sub-total	7	50	24	0	7	38	35	0	6	52	22	1
Girls	Highest Third	6	34	41	19	56	28	16	0	0	28	63	9
	Middle Third	0	47	53	0	3	34	60	3	0	9	82	9
	Lowest Third	0	11	44	44	11	72	17	0	0	72	28	0
	Sub-total	2	28	38	13	21	33	26	1	0	25	51	6
Total -		9	78	62	13	28	71	61	1	0	77	73	7

Only six boys in the entire grade of one hundred sixty-four pupils found this very interesting. Second and third ratings received seven-eighths of all the votes.

Table 23. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Construction of a Hygrometer to Determine Home Humidity."

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		1	2	3	4	1	2	3	4	1	2	3	4
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	54	21	0	8	50	42	0	4	46	46	4
	Middle Third	3	83	14	0	0	26	69	0	12	80	8	0
	Lowest Third	0	35	65	0	22	74	0	0	4	57	39	0
	Sub-total	7	50	24	0	7	38	35	0	6	52	22	1
Girls	Highest Third	6	34	41	19	26	28	16	0	0	28	63	9
	Middle Third	0	47	53	0	3	34	60	3	0	9	82	9
	Lowest Third	0	11	44	44	11	72	17	0	0	72	28	0
	Sub-total	2	28	38	13	21	33	26	1	0	25	51	6
Total -		9	78	62	13	28	71	61	1	0	77	73	7

Only six boys in the entire grade of one hundred sixty-four pupils found this very interesting. Second and third ratings received seven-eighths of all the votes.

Table 24. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Commercial Air Conditioning."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(14)	(11)	(12)	(13)
Boys	Highest Third	42	54	0	4	0	33	50	7	25	67	4	4
	Middle Third	23	77	0	0	0	23	77	0	9	82	9	0
	Lowest Third	22	74	4	0	48	52	0	0	0	26	61	13
	Sub-total	23	57	1	1	11	28	39	2	9	52	18	4
Girls	Highest Third	41	47	12	0	0	28	60	12	19	75	3	0
	Middle Third	50	50	0	0	9	57	34	0	9	53	26	12
	Lowest Third	17	72	11	0	11	72	17	0	0	78	22	0
	Sub-total	32	44	5	0	5	42	31	3	9	57	14	2
Total -		55	101	6	1	16	70	70	5	18	109	32	6

All of the Middle Third girls found this topic useful or very useful. Greatest difficulty was experienced by the lowest third groups while upper groups found the greatest interest.

Table 24. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Commercial Air Conditioning."

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		1	2	3	4	1	2	3	4	1	2	3	4
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	42	54	0	4	0	33	50	7	25	67	4	4
	Middle Third	23	77	0	0	0	23	77	0	9	82	9	0
	Lowest Third	22	74	4	0	48	52	0	0	0	26	61	13
	Sub-total	23	57	1	1	11	28	39	2	9	52	18	4
	Highest Third	41	47	12	0	0	28	60	12	19	75	3	0
Girls	Middle Third	50	50	0	0	9	57	34	0	9	53	26	12
	Lowest Third	17	72	11	0	11	72	17	0	0	78	22	0
	Sub-total	32	44	2	0	2	42	31	3	9	57	14	2
	Total -	55	101	6	1	16	70	70	5	18	109	32	6

All of the Middle Third girls found this topic useful or very useful. Greatest difficulty was experienced by the lowest third groups while upper groups found the greatest interest.

Table 25. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the Topic: "Experiments With a Tire Pump to Determine Compressibility of Air." Operation.

Percentages Giving Different Ratings of

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	71	4	0	0	29	67	4	21	58	4	17
	Middle Third	12	83	5	0	0	6	66	28	9	83	8	0
	Lowest Third	0	13	70	17	0	57	43	0	0	57	43	0
	Sub-total	10	49	18	4	0	22	49	11	8	56	13	3
Girls	Highest Third	9	88	3	0	0	6	94	0	13	82	5	0
	Middle Third	16	84	0	0	0	9	69	22	9	72	19	0
	Lowest Third	0	11	67	22	0	78	22	0	0	67	33	0
	Sub-total	8	57	13	4	0	19	56	7	7	61	14	0
Total -		18	107	31	8	0	41	105	18	15	117	27	3

Upper and middle third groups found greatest usefulness in this item. Majorities of both sexes voted useful, easy, and interesting. Heavy majorities of both sexes found it difficult or very difficult. Lowest third groups found least use for topic. No one had previous knowledge of the material.

Table 26. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Experiments with a Siphon and Discovering Scientific Principles of its Operation."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
(1)		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	46	54	0	0	0	29	67	4	17	58	25	0
	Middle Third	0	14	83	3	49	46	5	0	29	71	0	0
	Lowest Third	0	0	39	61	30	66	4	0	0	4	65	31
	Sub-total	1	28	38	15	24	50	8	0	11	41	23	7
Girls	Highest Third	3	66	28	3	41	53	6	0	53	47	0	0
	Middle Third	0	47	53	0	38	53	9	0	13	74	13	0
	Lowest Third	0	11	28	61	17	78	5	0	0	28	72	0
	Sub-total	1	38	30	12	28	48	4	0	21	44	17	0
Total -		2	66	68	27	52	98	12	0	32	85	40	0

All of the upper third boys considered this item useful. Heavy majorities of both sexes found it difficult or very difficult. Lowest third groups found least use for topic. No one had previous knowledge of the material.

Table 26. Opinions of Eighth-Grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Experiments with a Balloon and Discovering Scientific Principles of Air Operation."

Percentages Giving Different Ratings of												
Intelligence Group	Sex and	Usefulness			Difficulty			Interest				
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
Boys	Highest Third	0	0	0	0	0	0	0	0	0	0	0
	Middle Third	0	14	83	0	42	42	0	62	71	0	0
	Lowest Third	0	0	32	61	0	68	0	0	62	31	0
	Sub-total	1	28	38	15	24	50	8	0	11	41	23
	Highest Third	3	62	22	3	41	23	6	0	23	47	0
Girls	Middle Third	0	47	52	0	38	53	0	0	13	74	0
	Lowest Third	0	11	28	61	17	78	5	0	0	28	72
	Sub-total	1	38	30	12	25	48	4	0	21	44	17
	Total	2	66	68	27	52	98	12	0	32	95	40

All of the upper third boys considered this item useful. Heavy majorities of both sexes found it difficult or very difficult. Lowest third groups found least use for topic. No one had previous knowledge of the material.

Table 27. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Mechanics of Breathing through use of a Manniken and Illustrated Charts."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (6)	3 (7)	2 (8)	1 (9)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	46	54	0	0	0	29	67	4	17	58	25	0
	Middle Third	63	37	0	0	0	74	26	0	12	86	2	0
	Lowest Third	4	47	49	0	17	78	5	0	0	74	26	0
	Sub-total	34	40	7	0	4	51	26	1	8	62	10	0
Girls	Highest Third	47	50	3	0	0	9	91	0	3	82	12	3
	Middle Third	50	50	0	0	0	41	53	6	6	75	16	3
	Lowest Third	0	17	72	11	22	67	11	0	6	78	16	0
	Sub-total	31	33	14	2	4	28	48	1	4	64	11	2
Total -		65	73	21	2	8	79	74	2	12	126	21	2

Greatest agreement was found in interest with-three fourths favoring the third rating: interesting. Upper groups voted useful or very useful almost entirely. Half the grade favored the second and third ratings.

ratings.

useful almost entirely. Half the grade favored the second and third ratings. ing the third rating: interesting. Upper groups voted useful or very Greatest agreement was found in interest with three fourths favor-

		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
Sex and Intelligence Group	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
		1	2	3	4	1	2	3	4	1	2	3	4
Boys	Highest Third	46	54	0	0	0	29	67	4	17	58	25	0
	Middle Third	63	37	0	0	0	74	26	0	12	86	2	0
	Lowest Third	4	47	49	0	17	78	5	0	0	74	26	0
	Sub-total	34	40	7	0	4	51	26	1	8	62	10	0
Girls	Highest Third	47	50	3	0	0	9	91	0	3	82	12	3
	Middle Third	50	50	0	0	0	41	53	6	6	75	16	3
	Lowest Third	0	17	72	11	22	67	11	0	6	78	16	0
	Sub-total	31	33	14	2	4	28	48	1	4	64	11	2
Total -		65	73	21	2	8	79	74	2	12	126	21	2

Table 27. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Mechanics of Breathing through use of a Menniken and Illustrated Charts."

Table 28. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Common Diseases of the Breathing System."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest	33	67	0	0	0	42	50	8	25	54	21	0
	Third	66	34	0	0	69	29	2	0	17	77	6	0
	Middle	22	44	34	0	78	22	0	0	0	22	78	0
	Lowest	36	37	8	0	42	24	13	1	12	45	24	0
	Sub-total	13	82	5	0	41	59	0	0	16	72	18	0
Girls	Highest	63	37	0	0	69	22	0	0	16	72	18	0
	Third	0	33	67	0	72	28	0	0	0	22	67	11
	Middle	24	44	15	0	48	31	0	0	5	46	28	2
	Lowest	60	81	23	0	90	55	13	1	17	91	52	2
	Sub-total												
Total -													

Upper groups found greatest use and least difficulty. Lowest ability groups found greatest difficulty. Reactions of boys and girls third groups but greatest difficulty was experienced by middle and lower groups. Numbers of boys and girls choosing each rating were in close agreement. It is worth noting that this subject was very interesting to almost three-fourths of the girls in the highest ability group.

agreement.

Groups. Numbers of boys and girls choosing each rating were in close third groups but greatest difficulty was experienced by middle and lower Greatest usefulness for this topic was found by middle and upper

Sex and Intelligence Group	Usefulness				Difficulty				Interest			
	4	3	2	1	4	3	2	1	4	3	2	1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	33	67	0	0	0	42	50	8	25	54	21
	Middle Third	66	34	0	0	69	29	2	0	17	77	6
	Lowest Third	22	44	34	0	78	22	0	0	22	78	0
	Sub-total	36	37	8	0	42	24	13	1	45	24	0
Girls	Highest Third	13	82	5	0	41	59	0	0	16	72	18
	Middle Third	63	37	0	0	69	22	0	0	16	72	18
	Lowest Third	0	33	67	0	72	28	0	0	22	67	11
	Sub-total	24	44	15	0	48	31	0	0	5	46	28
Total -		60	81	23	0	90	55	13	1	17	91	2

Percentages Giving Different Ratings of

of the Breathing System."

and Interest of the topic: "A Study of Common Diseases

Ability Levels Concerning the Usefulness, Difficulty,

Table 28. Opinions of Eighth-grade Boys and Girls of Different

Table 29. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the History of Fire."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	88	4	8	0	4	21	71	4	25	33	25	17
	Middle Third	26	62	12	0	0	14	86	0	6	85	9	0
	Lowest Third	0	9	65	26	9	78	13	0	0	39	44	17
	Sub-total	30	25	11	6	3	28	50	1	8	47	19	7
Girls	Highest Third	72	19	9	0	0	9	82	9	72	28	0	0
	Middle Third	9	56	28	7	0	44	56	0	6	53	32	9
	Lowest Third	0	11	83	6	22	78	0	0	0	67	28	5
	Sub-total	26	26	15	3	4	31	43	3	25	37	16	4
Total -		56	51	26	9	7	59	93	4	33	80	35	11

Upper groups found greatest use and least difficulty. Lowest ability groups found greatest difficulty. Reactions of boys and girls were in close agreement. It is worth noting that this subject was very interesting to almost three-fourths of the girls in the highest ability group.

ability group.

very interesting to almost three-fourths of the girls in the highest ability groups found greatest difficulty. Reactions of boys and girls were in close agreement. It is worth noting that this subject was Upper groups found greatest use and least difficulty. Lowest

Sex and Intelligence Group													
(1)													
Usefulness				Difficulty				Interest					
4	3	2	1	4	3	2	1	4	3	2	1		
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)		
Boys													
Highest Third	88	4	8	0	4	21	71	4	25	33	25	17	
Middle Third	26	62	12	0	0	14	86	0	6	85	9	0	
Lowest Third	0	9	65	26	9	78	13	0	0	39	44	17	
Sub-total	30	25	11	6	3	28	50	1	8	47	19	7	
Girls													
Highest Third	72	19	9	0	0	9	82	9	72	28	0	0	
Middle Third	9	56	28	7	0	44	56	0	6	53	32	9	
Lowest Third	0	11	83	6	22	78	0	0	0	67	28	5	
Sub-total	26	26	12	3	4	31	43	3	25	37	16	4	
Total -	56	51	26	9	7	59	93	4	33	80	35	11	

Five."

and interest of the topic: "A Study of the History of

Ability Levels Concerning the Usefulness, Difficulty,

Table 29. Opinions of Eighth-grade Boys and Girls of Different

Table 30. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study and Discussion of Methods of Fire Making."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	62	0	0	0	29	71	0	25	58	8	4
	Middle Third	60	31	9	0	0	6	66	28	14	83	3	0
	Lowest Third	0	26	74	0	0	52	48	0	0	30	70	0
	Sub-total	30	32	19	0	0	21	51	10	11	50	19	1
Girls	Highest Third	63	34	3	0	0	6	75	19	72	28	0	0
	Middle Third	3	66	31	0	0	19	81	0	6	53	41	0
	Lowest Third	0	22	78	0	11	39	50	0	0	6	72	22
	Sub-total	21	36	25	0	2	15	59	5	25	27	25	4
Total -		51	68	44	0	2	36	110	15	36	77	44	5

This topic was most interesting to highest third girls. Upper and middle groups found the most usefulness. A Majority found the work easy. All voted some usefulness in the material.

Table 30. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study and Discussion of Methods of Fire Making."

Percentages Giving Different Ratings of												
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest		
		#	(2)	(3)	(4)	#	(5)	(6)	(7)	(8)	(9)	(10)
Boys	Highest Third	38	62	0	0	0	29	71	0	25	58	8
	Middle Third	60	31	9	0	0	66	28	14	83	3	0
	Lowest Third	0	26	74	0	0	52	48	0	30	70	0
	Sub-total	30	32	19	0	0	21	51	10	50	19	1
Girls	Highest Third	63	34	3	0	0	6	75	19	72	28	0
	Middle Third	3	66	31	0	0	19	81	0	53	41	0
	Lowest Third	0	22	78	0	11	39	50	0	6	72	22
	Sub-total	21	36	25	0	2	15	59	5	27	25	4
Total -		51	68	44	0	2	36	110	15	36	77	5

This topic was most interesting to highest third girls. Upper and middle groups found the most usefulness. A majority found the work easy. All voted some usefulness in the material.

Table 31. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study and Discussion of Chemical Changes in Combustion."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	58	4	0	4	17	79	0	4	46	42	8
	Middle Third	0	14	69	17	3	77	20	0	0	23	66	11
	Lowest Third	0	26	74	0	17	83	0	0	0	13	78	9
	Sub-total	9	25	42	6	6	50	25	0	1	22	51	7
Girls	Highest Third	0	19	60	21	9	75	16	0	3	41	41	15
	Middle Third	0	13	72	15	22	78	0	0	0	22	78	0
	Lowest Third	0	0	50	50	28	72	0	0	0	11	83	6
	Sub-total	0	10	51	19	15	62	4	0	1	22	54	5
Total -		9	35	96	25	21	112	29	0	2	44	105	12

Greatest usefulness was found by highest third boys. Majorities of all groups chose second or third ratings.

three-fourths of the groups found the topic interesting enough a large majority of groups were found to have a little interest.

Table 31. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study and Discussion of Chemical Changes in Combustion."

Percentages Giving Different Ratings of												
Sex and Intelligence Group	Usefulness				Difficulty				Interest			
	1	2	3	4	1	2	3	4	1	2	3	4
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	58	4	0	4	17	79	0	4	46	42
	Middle Third	0	14	69	17	3	77	20	0	0	23	66
	Lowest Third	0	26	74	0	17	83	0	0	0	13	78
	Sub-total	9	25	42	6	6	50	25	0	1	22	51
Girls	Highest Third	0	19	60	21	9	75	16	0	3	41	41
	Middle Third	0	13	72	15	22	78	0	0	0	22	78
	Lowest Third	0	50	50	0	28	72	0	0	0	11	63
	Sub-total	0	10	51	19	15	62	4	0	1	22	54
Total -		9	35	96	25	21	112	29	0	2	44	105

of all groups chose second or third ratings. Greatest usefulness was found by highest third boys. Majorities

Table 32. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Experiments with Methods of Extinguishing Fire."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	71	29	0	0	0	50	50	0	0	21	79	0
	Middle Third	66	34	0	0	0	20	71	9	12	86	0	0
	Lowest Third	48	52	0	0	0	57	43	0	9	78	13	0
	Sub-total	51	30	0	0	0	32	47	3	6	53	31	0
Girls	Highest Third	78	19	3	0	0	69	31	0	16	61	19	4
	Middle Third	72	28	0	0	0	16	84	0	16	84	0	0
	Lowest Third	0	56	39	5	22	72	6	0	22	72	6	0
	Sub-total	48	24	8	1	4	40	35	0	14	62	4	1
Total -		99	54	8	1	4	72	82	3	20	115	35	1

This topic had positive usefulness for all groups. Opinion was almost equally divided on second and third difficulty ratings. Almost three-fourths of the grade found the item interesting. Strangely enough a large majority of highest third boys found the work of little interest.

Table 32. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Experiments with Methods of Extinguishing Fire."

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		#	1	2	3	#	1	2	3	#	1	2	3
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Boys	Highest Third	71	29	0	0	0	50	50	0	0	21	79	0
	Middle Third	66	34	0	0	0	20	71	9	12	86	0	0
	Lowest Third	48	52	0	0	0	57	43	0	9	78	13	0
	Sub-total	51	30	0	0	0	32	47	3	6	53	31	0
Girls	Highest Third	78	19	3	0	0	69	31	0	16	61	19	4
	Middle Third	72	28	0	0	0	16	84	0	16	84	0	0
	Lowest Third	0	56	39	5	22	72	6	0	22	72	6	0
	Sub-total	48	24	8	1	4	40	35	0	14	62	4	1
Total -		99	54	8	1	4	72	82	3	20	115	35	1

This topic had positive usefulness for all groups. Opinion was almost equally divided on second and third difficulty ratings. Almost three-fourths of the grade found the item interesting. Strangely enough a large majority of highest third boys found the work of little interest.

Table 33. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Proper Treatment of Burns."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	79	21	0	0	13	54	17	16	8	46	38	8
	Middle Third	71	29	0	0	0	88	6	0	20	63	17	0
	Lowest Third	4	70	26	0	22	78	0	0	4	65	31	0
	Sub-total	45	30	5	0	8	58	12	3	27	36	15	2
Girls	Highest Third	88	12	0	0	9	60	31	0	69	31	0	0
	Middle Third	53	47	0	0	6	88	6	0	22	69	9	0
	Lowest Third	0	11	83	6	17	72	11	0	0	72	28	0
	Sub-total	45	21	5	1	8	60	15	0	29	45	8	0
Total -		90	51	10	0	16	118	27	3	56	81	23	2

Majorities of all except lowest ability groups found this topic very useful; only ten judged the work of little use. Almost three-fourths of the class found the work difficult with a slightly larger number finding the work very interesting or interesting.

Table 33. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Proper Treatment of Burns."

Sex and Intelligence Group		Usefulness			Difficulty			Interest		
		1	2	3	1	2	3	1	2	3
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Boys	Highest Third	79	21	0	0	13	24	17	16	8
	Middle Third	71	29	0	0	88	6	0	20	68
	Lowest Third	4	70	26	0	22	78	0	4	66
	Sub-total	45	30	5	0	8	58	12	3	27
	Total	120	80	25	0	101	88	17	23	102
Girls	Highest Third	68	12	0	0	9	60	31	0	69
	Middle Third	53	47	0	0	6	88	6	0	22
	Lowest Third	0	11	88	6	17	78	11	0	72
	Sub-total	45	21	5	1	8	60	15	0	29
	Total	90	51	10	0	36	116	27	3	56

Majorities of all except lowest ability groups found this topic very useful; only ten judged the work of little use. Almost three-fourths of the class found the work difficult with a slightly larger number finding the work very interesting or interesting.

Table 34. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study of Local and State Fire Laws Pertaining to School, Home and Public Buildings."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	54	42	4	0	0	42	54	4	21	58	18	3
	Middle Third	3	74	20	3	0	9	80	11	6	86	8	0
	Lowest Third	0	0	35	65	0	57	43	0	17	70	13	0
	Sub-total	14	36	16	16	0	26	51	5	11	60	8	1
Girls	Highest Third	25	66	5	4	3	75	19	3	6	82	12	0
	Middle Third	0	28	69	3	0	6	78	16	13	82	5	0
	Lowest Third	0	0	39	61	11	72	17	0	0	78	22	0
	Sub-total	8	30	30	13	3	39	34	7	6	66	9	0
Total		22	66	46	29	3	65	85	12	17	126	17	1

Highest and middle third boys and highest third girls found this material useful or very useful. Majorities of both lower third groups found the work useless. All were in close agreement on difficulty and interest.

Table 34. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study of Local and State Fire Laws Pertaining to School, Home and Public Buildings."

Percentages Giving Different Ratings of												
Intelligence Group	Sex and	Usefulness				Difficulty				Interest		
		4	3	2	1	4	3	2	1	4	3	2
(1)		(5)	(4)	(3)	(2)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Boys	Highest Third	54	42	4	0	0	42	54	4	21	58	18
	Middle Third	3	74	20	3	0	9	80	11	6	86	8
	Lowest Third	0	0	35	65	0	57	43	0	17	70	13
	Sub-total	14	36	16	16	0	26	51	5	11	60	8
Girls	Highest Third	25	66	5	4	3	75	19	3	6	82	12
	Middle Third	0	28	69	3	0	6	78	16	13	82	5
	Lowest Third	0	0	39	61	11	72	17	0	0	78	22
	Sub-total	8	30	30	13	3	39	34	7	6	66	9
Total		22	66	46	29	3	65	82	12	17	126	17

Highest and middle third boys and highest third girls found this material useful or very useful. Majorities of both lower third groups found the work useless. All were in close agreement on difficulty and interest.

Table 35. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Reasons for School Fire Drills."

Percentages Giving Different Ratings of

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	71	21	8	0	0	33	58	9	17	50	17	8
	Middle Third	83	17	0	0	0	0	25	75	71	23	6	0
	Lowest Third	9	70	21	0	13	61	26	0	9	83	8	0
	Sub-total	48	27	6	0	3	22	28	29	31	39	9	3
	Highest Third	88	12	0	0	0	6	66	28	31	66	3	0
	Middle Third	66	34	0	0	0	0	28	72	44	56	0	0
	Lowest Third	17	78	5	0	17	83	0	0	11	78	11	0
Sub-total		52	29	1	0	3	17	30	32	26	53	3	0
Total		100	56	7	0	6	39	58	61	57	92	12	3

Lowest third groups found this item useful although the other ability groups voted it very useful. Although middle third groups felt that they knew the subject already, they found it very interesting, nevertheless.

Table 35. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Reasons for School Fire Drills."

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	71	21	8	0	0	33	58	9	17	50	17	8
	Middle Third	83	17	0	0	0	25	75	71	23	6	0	0
	Lowest Third	9	70	21	0	13	61	26	0	83	8	0	0
	Sub-total	48	27	6	0	3	22	28	29	31	39	9	3
	Highest Third	88	12	0	0	0	66	28	31	66	3	0	0
	Middle Third	66	34	0	0	0	28	72	44	56	0	0	0
Girls	Lowest Third	17	78	5	0	17	83	0	0	11	78	11	0
	Sub-total	52	29	1	0	3	17	30	32	26	53	3	0
	Total	100	56	7	0	6	39	58	61	57	92	12	3

lowest third groups found this item useful although the other ability groups voted it very useful. Although middle third groups felt that they knew the subject already, they found it very interesting, nevertheless.

Table 36. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Procedure in Ringing a Fire Alarm and Classroom Examination of a Fire Alarm Box."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	54	46	0	0	0	38	50	12	8	25	46	21
	Middle Third	53	47	0	0	0	3	57	40	40	57	3	0
	Lowest Third	17	79	4	0	9	44	26	21	44	35	21	0
	Sub-total	36	43	1	0	2	20	38	22	26	34	17	3
Girls	Highest Third	88	12	0	0	0	0	22	78	47	41	12	0
	Middle Third	16	84	0	0	0	0	31	69	3	66	31	0
	Lowest Third	0	67	33	0	28	72	0	0	67	33	0	0
	Sub-total	33	42	8	0	5	13	17	46	28	40	11	0
Total -		69	85	9	0	7	33	55	68	54	74	28	3

Only a small minority saw little use in this material. Lowest third girls found the most difficulty and the greatest interest of all groups. The only dislike for this item was found among the upper third boys.

Table 36. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Procedure in Ringing a Fire Alarm and Classroom Examination of a Fire Alarm Box."

Sex and Intelligence Group	Percentages Giving Different Ratings of											
	Usefulness				Difficulty				Interest			
	1	2	3	4	1	2	3	4	1	2	3	4
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	54	46	0	0	38	50	12	8	25	46	21
	Middle Third	53	47	0	0	3	57	40	40	57	3	0
	Lowest Third	17	79	4	0	9	44	26	21	44	35	21
	Sub-total	36	43	1	0	2	20	38	22	26	34	17
		3										
Girls	Highest Third	88	12	0	0	0	22	78	47	41	12	0
	Middle Third	16	84	0	0	0	31	69	3	66	31	0
	Lowest Third	0	67	33	0	28	72	0	0	67	33	0
	Sub-total	33	42	8	0	2	13	17	46	28	40	11
		0										
Total -		69	85	9	0	7	33	55	68	54	74	28

Only a small minority saw little use in this material. Lowest third girls found the most difficulty and the greatest interest of all groups. The only dislike for this item was found among the upper third boys.

Table 37. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Examination and Discussion of Sodacid Tetrachloride and Carbon Dioxide Extinguishers."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	50	50	0	0	0	25	71	4	17	49	17	17
	Middle Third	17	83	0	0	0	26	71	3	9	71	20	0
	Lowest Third	0	26	52	22	0	26	74	0	9	65	26	0
	Sub-total	18	47	12	5	0	21	60	2	9	49	17	4
Girls	Highest Third	22	16	12	0	0	19	38	43	9	44	47	0
	Middle Third	19	81	0	0	0	44	56	0	22	75	3	0
	Lowest Third	0	9	78	13	28	61	11	0	44	50	6	0
	Sub-total	13	48	18	2	5	31	32	10	18	47	20	0
Total -		31	95	30	7	5	52	92	12	27	96	37	4

Boys found the work much easier than did the girls. In all other ratings sexes were in almost complete agreement. Only a fraction of the lower third girls voted this item very difficult. The only dislike was found in the upper third group of boys.

no use at all.

found in the upper third group of boys. Boys found the work much easier than did the girls. In all other ratings sexes were in almost complete agreement. Only a fraction of the lower third girls voted this item very difficult. The only dislike was

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest	
		# (2)	% (3)	# (4)	% (5)	# (6)	% (7)	# (8)	% (9)	# (10)	% (11)
Boys	Highest Third	50	50	0	0	0	25	71	4	17	49
	Middle Third	17	83	0	0	0	26	71	3	9	71
	Lowest Third	0	26	22	22	0	26	74	0	9	65
	Sub-total	18	47	12	5	0	21	60	2	9	49
Girls	Highest Third	22	16	12	0	0	19	38	43	9	44
	Middle Third	19	81	0	0	0	44	56	0	22	75
	Lowest Third	0	9	78	13	28	61	11	0	44	50
	Sub-total	13	48	18	2	5	31	32	10	18	47
Total -		31	95	30	7	5	52	92	12	27	96
										37	4

of Sodium Tetrachloride and Carbon Dioxide Extinguishers." and interest of the topic: "Examination and Discussion

Ability Levels Concerning the Usefulness, Difficulty,

Table 37. Opinions of Eighth-grade Boys and Girls of Different

Table 38. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Theories Relating to Early History of the Earth."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	58	4	0	0	8	92	0	4	22	66	8
	Middle Third	0	0	25	75	82	18	0	0	0	9	77	14
	Lowest Third	0	26	48	26	78	22	0	0	0	13	78	9
	Sub-total	9	18	20	33	44	16	19	0	1	11	59	9
Girls	Highest Third	0	3	28	69	72	25	3	0	3	22	59	16
	Middle Third	0	9	75	16	72	28	0	0	0	19	78	3
	Lowest Third	0	0	22	78	50	50	0	0	0	0	78	22
	Sub-total	0	4	37	39	55	26	1	0	1	13	58	10
Total -		9	22	57	72	99	42	20	0	2	24	117	19

This work which delved into the theories of earth origin was very difficult for all groups except the upper third boys who voted it easy. Majorities of all groups found the work of little interest. Middle third boys and highest and lowest third girls considered the item of no use at all.

no use at all.

third boys and highest and lowest third girls considered the item of

Majorities of all groups found the work of little interest. Middle

difficult for all groups except the upper third boys who voted it easy.

This work which delved into the theories of earth origin was very

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	58	4	0	0	8	92	0	4	22	66	8
	Middle Third	0	0	25	75	82	18	0	0	0	9	77	14
	Lowest Third	0	26	48	26	78	22	0	0	0	13	78	9
	Sub-total	9	18	20	33	44	16	19	0	1	11	59	9
	Highest Third	0	3	28	69	72	25	3	0	3	22	59	16
Girls	Middle Third	0	9	75	16	72	28	0	0	0	19	78	3
	Lowest Third	0	0	22	78	50	50	0	0	0	0	78	22
	Sub-total	0	4	37	39	55	26	1	0	1	13	58	10
	Total -	9	22	57	72	99	42	20	0	2	24	117	19
	Highest Third	0	0	22	78	50	50	0	0	0	0	78	22

Percentages Giving Different Ratings of

Early History of the Earth."

and Interest of the topic: "A Study of Theories Relating to Ability Levels Concerning the Usefulness, Difficulty,

Table 38. Opinions of Eighth-grade Boys and Girls of Different

Table 39. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Science's Explanations of Rock Origin and Change."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	29	58	13	0	0	42	58	0	4	46	50	0
	Middle Third	0	0	29	71	71	29	0	0	0	12	71	17
	Lowest Third	0	13	61	26	9	44	47	0	0	13	74	13
	Sub-total	7	17	27	32	27	30	25	0	1	18	53	9
Girls	Highest Third	0	0	78	22	0	34	66	0	3	19	78	3
	Middle Third	0	9	53	38	41	47	12	0	0	16	78	6
	Lowest Third	0	0	28	72	33	67	0	0	0	6	50	44
	Sub-total	0	3	47	32	19	38	24	0	1	12	58	11
Total -		7	20	74	64	46	68	49	0	2	30	111	20

Reactions on this item were considerably spread with opinions divided closely between little use and no use at all. Greatest agreement was found in interest with a liberal majority deciding the work to be of little interest.

Table 39. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Science's Explanations of Rock Origin and Change."

Percentages Giving Different Ratings of												
Sex and Intelligence Group		Usefulness				Difficulty				Interest		
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Boys	Highest Third	29	58	13	0	0	42	58	0	4	46	50
	Middle Third	0	0	29	71	71	29	0	0	12	71	17
	Lowest Third	0	13	61	26	9	44	47	0	13	74	13
	Sub-total	7	17	27	32	27	30	25	0	1	18	53
	Highest Third	0	0	78	22	0	34	66	0	3	19	78
Girls	Middle Third	0	9	53	38	41	47	12	0	0	16	78
	Lowest Third	0	0	28	72	33	67	0	0	0	6	50
	Sub-total	0	3	47	32	19	38	24	0	1	12	58
	Total -	7	20	74	64	46	68	49	0	2	30	111

Reactions on this item were considerably spread with opinions divided closely between little use and no use at all. Greatest agreement was found in interest with a liberal majority deciding the work to be of little interest.

Table 40. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Three Rock Families."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	29	54	17	0	13	79	8	0	29	58	13	0
	Middle Third	0	6	74	20	43	57	0	0	0	12	71	17
	Lowest Third	0	13	70	17	52	44	4	0	0	4	78	18
	Sub-total	7	18	45	11	30	48	3	0	7	19	45	10
Girls	Highest Third	3	25	60	12	60	40	0	0	0	31	63	6
	Middle Third	0	25	75	0	22	78	0	0	0	6	82	12
	Lowest Third	0	0	50	50	11	72	17	0	0	28	66	6
	Sub-total	1	16	52	13	28	51	3	0	0	17	58	7
Total -		8	34	97	24	58	99	6	0	7	36	103	17

Here again highest third boys find real usefulness in the item.

Only the highest third boys saw any real use or interest in this item although they seem to have found the work as difficult as did all other groups. Girls and boys closely agreed in their choices of ratings. General consensus: little use, difficult, little interest.

ratings. General consensus: little use, difficult, little interest. all other groups. Girls and boys closely agreed in their choices of item although they seem to have found the work as difficult as did Only the highest third boys saw any real use or interest in this

Sex and Intelligence Group	(1)	Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		#	1	2	3	#	1	2	3	#	1	2	3
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	29	54	17	0	13	79	8	0	29	58	13	0
	Middle Third	0	6	74	20	43	57	0	0	0	12	71	17
	Lowest Third	0	13	70	17	52	44	4	0	0	4	78	18
	Sub-total	7	18	45	11	30	48	3	0	7	19	45	10
Girls	Highest Third	3	25	60	12	60	40	0	0	0	31	63	6
	Middle Third	0	25	75	0	22	78	0	0	0	6	82	12
	Lowest Third	0	0	50	50	11	72	17	0	0	28	66	6
	Sub-total	1	16	52	13	28	51	3	0	0	17	58	7
Total -		8	34	97	24	58	99	6	0	7	36	103	17

Table #0. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Three Rock Families."

Table 41. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Discussion of the Possible Explanations for New England's Rocky Surface."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	29	71	0	0	0	33	67	0	25	54	17	4
	Middle Third	0	0	63	37	0	43	46	11	0	83	17	0
	Lowest Third	0	13	57	30	22	70	8	0	0	44	56	0
	Sub-total	7	20	35	19	5	39	33	4	6	52	21	1
Girls	Highest Third	0	71	29	0	4	46	50	0	83	17	0	0
	Middle Third	0	0	72	28	3	66	31	0	13	87	0	0
	Lowest Third	0	33	67	0	22	78	0	0	0	22	72	6
	Sub-total	0	23	49	9	6	46	29	0	24	44	13	1
Total -		7	43	84	28	11	85	62	4	30	96	34	2

Here again highest third boys find real usefulness in the item.

Of the girls, the highest third considered it useful. Least interest was voted by lowest third groups. Highest third girls found greater interest in the item than any of the other groups.

with the work. Majorities of the lowest groups decided that they knew the work already although how they could have known it previously is a matter of conjecture.

Table II. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Discussion of the Possible Explanations for New England's Rocky Surface."

Percentages Giving Different Ratings of														
Sex and Intelligence Group	(1)	Usefulness			Difficulty			Interest						
		4 (5)	3 (4)	2 (3)	4 (5)	3 (4)	2 (3)	4 (5)	3 (4)	2 (3)	4 (5)	3 (4)	2 (3)	
Boys	Highest Third	29	71	0	0	33	67	0	25	24	17	4		
	Middle Third	0	0	63	37	0	43	46	11	0	83	17	0	
	Lowest Third	0	13	57	30	22	70	8	0	41	56	0		
	Sub-total	7	20	35	19	5	39	33	4	52	21	1		
	Highest Third	0	71	29	0	4	46	50	0	83	17	0		
Girls	Middle Third	0	0	72	28	3	66	31	0	13	87	0		
	Lowest Third	0	32	67	0	22	78	0	0	22	78	0		
	Sub-total	0	32	49	0	6	46	29	0	24	44	13		
	Total -	7	43	28	11	85	62	4	30	96	34	2		

Here again highest third boys find real usefulness in the item. Of the girls, the highest third considered it useful. Least interest was voted by lowest third groups. Highest third girls found greater interest in the item than any of the other groups.

Table 42. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Discussion of the Effects of Rock Formation upon New England Industry."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	21	67	8	4	8	67	25	0	17	58	25	0
	Middle Third	0	6	56	38	0	6	74	20	0	37	63	0
	Lowest Third	0	4	65	31	0	0	35	65	0	30	70	0
	Sub-total	5	19	35	23	2	18	38	22	4	34	43	0
Girls	Highest Third	13	72	15	0	0	22	72	6	28	53	19	0
	Middle Third	0	25	69	6	0	0	60	40	0	25	75	0
	Lowest Third	0	11	72	17	0	0	22	78	0	17	66	17
	Sub-total	4	33	40	5	0	7	46	28	9	28	38	3
Total -		9	52	75	28	2	25	84	50	13	62	81	3

The only usefulness and interest in this topic were found by highest third groups with the boys of that level experiencing difficulty with the work. Majorities of the lowest groups decided that they knew the work already although how they could have known it previously is a matter of conjecture.

Table #2. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Discussion of the Effects of Rock Formation upon New England Industry."

Percentages Giving Different Ratings of												
Sex and Intelligence Group	Usefulness				Difficulty				Interest			
	1	2	3	4	1	2	3	4	1	2	3	4
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	21	67	8	67	25	0	17	58	25	0	
	Middle Third	0	6	56	38	0	6	74	20	0	37	63
	Lowest Third	0	4	65	31	0	0	35	65	0	30	70
	Sub-total	5	19	35	23	2	18	38	22	4	34	43
Girls	Highest Third	13	72	15	0	0	22	72	6	28	53	19
	Middle Third	0	25	69	6	0	0	60	40	0	25	75
	Lowest Third	0	11	72	17	0	0	22	78	0	17	83
	Sub-total	4	33	40	5	0	7	46	28	9	28	38
Total		9	52	75	28	2	25	84	50	13	62	81

The only usefulness and interest in this topic were found by highest third groups with the boys of that level experiencing difficulty with the work. Majorities of the lowest groups decided that they knew the work already although how they could have known it previously is a matter of conjecture.

Table 43. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Uses to Which Man has Put Rocks."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	54	8	0	33	50	17	0	21	46	21	12
	Middle Third	0	6	46	48	77	23	0	0	89	11	0	0
	Lowest Third	0	0	44	56	30	70	0	0	30	61	9	0
	Sub-total	9	15	27	30	42	36	4	1	43	28	7	4
		13	12	32	24	5	52	24	1	2	24	49	5
Girls	Highest Third	28	47	25	0	0	25	66	9	25	75	0	0
	Middle Third	0	0	13	87	41	47	12	0	69	28	3	0
	Lowest Third	0	6	72	22	28	72	0	0	6	50	33	11
	Sub-total	9	6	23	32	18	36	25	2	31	42	7	2
		19	19	71	35	22	107	35	1	6	63	85	4
Total -		18	21	50	62	60	72	29	3	74	70	14	6

This work was of greatest interest to middle third groups, although the boys found it difficult. Greatest usefulness was found by the highest thirds. No definite majority of the grade chose any rating. highest third girls found it the most interesting. The work was definitely of little interest to middle and lowest groups.

Table #3. Opinions of Eighth-Grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Uses to Which Man has Put Rocks."

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		#	1	2	3	#	1	2	3	#	1	2	3
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	54	8	0	33	50	17	0	21	46	21	12
	Middle Third	0	6	46	48	77	23	0	0	89	11	0	0
	Lowest Third	0	0	44	56	30	70	0	0	30	61	9	0
	Sub-total	9	15	27	30	42	36	4	1	43	28	7	4
Girls	Highest Third	28	47	25	0	0	25	66	9	25	75	0	0
	Middle Third	0	0	13	87	41	47	12	0	69	28	3	0
	Lowest Third	0	6	72	22	28	72	0	0	6	50	33	11
	Sub-total	9	6	23	32	18	36	25	2	31	45	7	2
Total -		18	21	50	62	60	72	29	3	74	70	14	6

Percentages Giving Different Ratings of

This work was of greatest interest to middle third groups, although the boys found it difficult. Greatest usefulness was found by the highest thirds. No definite majority of the grade chose any rating.

Table 44. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Visual Materials Illustrating the Effects of Weathering Agents upon the Earth."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	54	42	4	0	0	21	75	4	8	58	30	4
	Middle Third	0	0	50	50	0	83	17	0	0	17	74	9
	Lowest Third	0	9	61	30	22	78	0	0	0	17	78	5
	Sub-total	13	12	32	24	5	52	24	1	2	24	49	5
Girls	Highest Third	19	63	15	3	0	69	31	0	13	87	0	0
	Middle Third	0	3	72	25	16	82	2	0	0	25	75	0
	Lowest Third	0	22	67	11	67	33	0	0	0	17	72	11
	Sub-total	6	7	39	11	7	55	11	0	4	39	37	2
Total -		19	19	71	35	22	107	35	1	6	63	86	7

Little real use was found for this item by middle or lowest groups. Least difficulty was experienced by highest third boys although the highest third girls found it the most interesting. The work was definitely of little interest to middle and lowest groups.

Table #4. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Visual Materials Illustrating the Effects of Weathering Agents upon the Earth."

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		#	1	2	3	#	1	2	3	#	1	2	3
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	54	42	4	0	0	21	75	4	8	58	30	4
	Middle Third	0	0	50	50	0	83	17	0	0	17	74	9
	Lowest Third	0	9	61	30	22	78	0	0	0	17	78	5
	Sub-total	13	12	32	24	5	52	24	1	2	24	49	5
	Total	19	19	71	35	22	107	35	1	6	63	86	7
Girls	Highest Third	19	63	15	3	0	69	31	0	13	87	0	0
	Middle Third	0	3	72	25	16	82	2	0	0	25	75	0
	Lowest Third	0	22	67	11	67	33	0	0	0	17	72	11
	Sub-total	6	7	39	11	7	52	11	0	4	39	37	2
	Total	19	19	71	35	22	107	35	1	6	63	86	7

definitely of little interest to middle and lowest groups. highest third girls found it the most interesting. The work was least difficulty was experienced by highest third boys although the little real use was found for this item by middle or lowest groups.

Table 45. Opinions of Eighth-grade Boys and Girls of Different Ability Levels concerning the Usefulness, Difficulty, and Interest of the topic: "A Study and Discussion of the Work of Underground Water."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	8	63	25	4	0	4	42	54	8	8	50	34
	Middle Third	0	9	86	5	0	20	80	0	0	71	29	0
	Lowest Third	0	17	74	9	26	74	0	0	52	48	0	0
	Sub-total	2	22	52	4	6	25	38	13	14	38	22	8
Girls	Highest Third	3	94	3	0	22	78	0	0	0	78	22	0
	Middle Third	0	28	72	0	0	40	60	0	6	85	9	0
	Lowest Third	0	0	61	39	39	61	0	0	17	66	17	0
	Sub-total	1	21	48	11	8	36	37	3	17	58	4	0
Total -		3	43	100	15	14	61	75	16	31	96	26	8

Highest third girls were almost unanimous in finding usefulness in this topic. To all other groups it was of little use. Lowest groups found the work difficult. Greatest interest was voted by the lowest third groups.

third groups.

found the work difficult. Greatest interest was voted by the lowest third group. To all other groups it was of little use. Lowest groups Highest third girls were almost unanimous in finding usefulness in

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	8	63	25	4	0	4	42	54	8	8	50	34
	Middle Third	0	9	86	5	0	20	80	0	0	71	29	0
	Lowest Third	0	17	74	9	26	74	0	0	52	48	0	0
	Sub-total	2	22	52	4	6	25	38	13	14	38	22	8
Girls	Highest Third	3	94	3	0	22	78	0	0	0	78	22	0
	Middle Third	0	28	72	0	0	40	60	0	6	85	9	0
	Lowest Third	0	0	61	39	39	61	0	0	17	66	17	0
	Sub-total	1	21	48	11	8	36	37	3	17	58	4	0
Total -		3	43	100	15	14	61	75	16	31	96	26	8

Percentages Giving Different Ratings of

the Work of Underground Water." and Interest of the topic: "A Study and Discussion of Ability Levels concerning the Usefulness, Difficulty, Opinions of Eighth-grade Boys and Girls of Different

Table 46. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Microscope Class Work in Preparation and Examination of Plant Cell Slides."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
- (1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	21	58	13	8	0	13	66	21	22	78	0	0
	Middle Third	6	86	8	0	0	6	82	12	12	74	14	0
	Lowest Third	0	13	78	9	0	65	35	0	0	35	65	0
	Sub-total	7	47	23	3	0	20	52	9	11	48	20	0
Girls	Highest Third	53	44	3	0	0	25	75	0	3	79	12	6
	Middle Third	13	75	12	0	0	19	81	0	41	41	18	0
	Lowest Third	0	17	72	11	17	72	11	0	0	22	72	6
	Sub-total	21	42	18	1	3	27	52	0	14	41	23	3
Total -		28	89	41	4	3	47	104	9	25	89	43	3

Lowest groups considered this activity of little use or interest and difficult to handle. Boys and girls were in close agreement on numbers choosing the different ratings.

Table 46. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Microscope Glass Work in Preparation and Examination of Plant Cell Slides."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
	(1)	4 (2)	3 (3)	2 (4)	1 (5)	4 (6)	3 (7)	2 (8)	1 (9)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest	21	58	13	8	0	13	66	21	22	78	0	0
	Third	6	86	8	0	0	6	82	12	12	74	14	0
	Middle	0	13	78	9	0	65	35	0	0	32	68	0
	Lowest	7	47	23	3	0	20	52	9	11	48	20	0
	Sub-total	38	89	41	4	0	47	104	9	25	89	43	3
Girls	Highest	53	44	3	0	0	25	75	0	3	79	12	6
	Third	13	75	12	0	0	19	81	0	41	41	18	0
	Middle	0	17	78	11	17	78	11	0	0	22	78	0
	Lowest	21	42	18	1	3	27	62	0	14	41	23	3
	Sub-total	88	89	41	4	0	47	104	9	25	89	43	3
Total -		126	178	82	8	0	94	208	18	50	178	86	6

Lowest groups considered this activity of little use or interest and difficult to handle. Boys and girls were in close agreement on numbers choosing the different ratings.

Table 47. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Resemblances and Differences of Organic and Inorganic Things."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
(1)		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	63	33	4	0	0	25	67	8	8	75	17	0
	Middle Third	17	77	6	0	0	17	77	6	3	34	63	0
	Lowest Third	4	48	48	0	13	70	17	0	0	30	70	0
	Sub-total	22	46	14	0	3	28	50	4	3	36	41	0
Girls	Highest Third	56	44	0	0	0	22	78	0	66	34	0	0
	Middle Third	22	78	0	0	0	47	53	0	0	22	78	0
	Lowest Third	0	11	67	21	6	67	27	0	0	17	66	17
	Sub-total	25	40	12	4	1	34	47	0	21	21	37	3
Total -		47	86	26	4	4	62	97	4	24	57	78	3

Highest groups found this work very useful. Lowest groups experienced the most difficulty. Least interest was voted by middle and lowest groups.

Table #7. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Resemblances and Differences of Organic and Inorganic Things."

Percentages Giving Different Ratings of												
Sex and Intelligence Group		Usefulness				Difficulty				Interest		
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Boys	Highest Third	63	33	4	0	0	25	67	8	8	75	17
	Middle Third	17	77	6	0	0	17	77	6	3	34	63
	Lowest Third	4	48	48	0	13	70	17	0	0	30	70
	Sub-total	22	46	14	0	3	28	50	4	3	36	41
		0										0
Girls	Highest Third	56	44	0	0	0	22	78	0	66	34	0
	Middle Third	22	78	0	0	0	47	53	0	0	22	78
	Lowest Third	0	11	67	21	6	67	27	0	0	17	66
	Sub-total	25	40	12	4	1	34	47	0	21	21	37
		3										3
Total -		47	86	26	4	4	62	97	4	24	57	78

Highest groups found this work very useful. Lowest groups experienced the most difficulty. Least interest was voted by middle and lowest groups.

Table 48. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Science's Classification of Life upon the Earth."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	67	4	4	13	46	29	12	4	33	59	4
	Middle Third	20	74	6	0	17	80	3	0	71	29	0	0
	Lowest Third	0	13	65	22	26	4	4	66	44	56	0	0
	Sub-total	13	45	18	6	15	40	9	20	34	20	12	1
Girls	Highest Third	66	28	6	0	16	84	0	0	63	37	0	0
	Middle Third	13	63	24	0	41	56	0	3	82	18	0	0
	Lowest Third	0	0	44	56	0	0	28	72	6	94	0	0
	Sub-total	25	29	17	10	18	45	5	12	47	12	0	0
Total -		38	74	35	16	33	85	14	32	81	32	12	1

Lowest groups found this item of little or no use. A large percentage of the lowest groups decided that they knew the work already. The topic possessed marked interest for all except highest third boys.

Table 48. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Science's Classification of Life upon the Earth."

Percentages Giving Different Ratings of													
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		# (2)	1 (3)	2 (4)	3 (5)	# (6)	1 (7)	2 (8)	3 (9)	# (10)	1 (11)	2 (12)	3 (13)
Boys	Highest Third	25	67	4	4	13	46	29	12	4	33	59	4
	Middle Third	20	74	6	0	17	80	3	0	71	29	0	0
	Lowest Third	0	13	65	22	26	4	66	44	56	0	0	0
	Sub-total	13	45	18	6	15	40	9	20	34	20	12	1
Girls	Highest Third	66	28	6	0	16	84	0	0	63	37	0	0
	Middle Third	13	63	24	0	41	56	0	3	82	18	0	0
	Lowest Third	0	44	56	0	0	28	72	6	94	0	0	0
	Sub-total	25	29	17	10	18	45	5	12	47	12	0	0
Total -		38	74	35	16	33	85	14	32	81	32	12	1

The topic possessed marked interest for all except highest third boys. percentage of the lowest groups decided that they knew the work already. Lowest groups found this item of little or no use. A large

Table 49. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Life History of the Frog and Experiments in the Hatching of Frog Eggs."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	17	29	42	12	25	58	17	0	21	50	4	25
	Middle Third	0	3	66	31	26	74	0	0	0	17	83	0
	Lowest Third	0	0	44	56	50	50	0	0	0	9	74	17
	Sub-total	4	8	43	23	26	50	5	0	5	19	47	6
Girls	Highest Third	9	19	41	31	6	56	38	0	0	56	38	6
	Middle Third	8	41	41	10	63	37	0	0	0	25	75	0
	Lowest Third	0	13	57	30	28	67	5	0	0	17	72	11
	Sub-total	5	22	40	14	27	42	13	0	0	29	49	4
Total -		9	30	83	37	53	92	18	0	5	48	96	10

This work presented less difficulty to highest third groups and was definitely of greater interest to them. A majority of the grade judged the material of little interest or usefulness.

Percentages Giving Different Ratings of

Table 50. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study of Chemical Makeup of Cells and Their Use of Food in Growth."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	13	38	46	3	3	54	29	14	0	54	33	13
	Middle Third	0	22	78	0	0	23	77	0	0	9	69	22
	Lowest Third	0	13	78	9	17	83	0	0	0	22	78	0
	Sub-total	3	19	56	4	4	40	35	3	0	21	50	8
Girls	Highest Third	63	34	3	0	6	76	19	0	0	41	59	0
	Middle Third	0	19	75	6	0	41	59	0	0	22	75	3
	Lowest Third	0	22	78	0	22	78	0	0	0	22	72	6
	Sub-total	20	21	39	2	6	51	25	0	0	24	56	2
Total -		23	40	95	6	10	91	60	3	0	45	106	10

Highest third girls found this study very useful, difficult to do but of little interest as handled. Majorities of other groups saw little use or interest. Lowest groups experienced greatest difficulty.

as to numbers choosing different ratings.

Total -		Girls				Boys				Sex and Intelligence Group							
		Highest Third		Middle Third		Lowest Third		Sub-total		Highest Third		Middle Third		Lowest Third		Sub-total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
23	40	95	6	10	91	60	3	0	45	106	10						
20	21	39	2	6	51	25	0	0	24	56	2						
0	22	78	0	22	78	0	0	0	22	72	6						
0	19	75	6	0	41	59	0	0	22	75	3						
63	34	3	0	6	76	19	0	0	41	59	0						
3	19	56	4	4	40	35	3	0	21	50	8						
0	13	78	9	17	83	0	0	0	22	78	0						
0	22	78	0	0	23	77	0	0	9	69	22						
13	38	46	3	3	54	29	14	0	54	33	13						

Little use or interest. Lowest groups experienced greatest difficulty. but of little interest as handled. Majorities of other groups saw Highest third girls found this study very useful, difficult to do

Table 51. Opinions of Eighth-Grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Resemblances and Differences of Plants and Animals."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (6)	3 (7)	2 (8)	1 (9)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	25	54	13	8	0	42	58	0	21	58	17	4
	Middle Third	0	37	63	0	0	26	66	8	0	31	66	3
	Lowest Third	30	70	0	0	17	78	5	0	0	17	83	0
	Sub-total	13	42	24	1	4	37	37	2	5	29	43	2
Girls	Highest Third	72	28	0	0	0	22	69	9	13	75	9	3
	Middle Third	19	53	28	0	6	41	53	0	0	28	72	0
	Lowest Third	22	72	6	0	11	83	6	0	0	17	78	5
	Sub-total	33	39	10	0	4	35	40	2	4	36	40	2
Total -		46	81	34	1	8	72	77	4	9	65	83	4

Only middle third boys failed to see usefulness in this activity. Lowest third groups experienced the greatest difficulty. Upper groups found the work of greatest interest. Girls and boys tallied closely as to numbers choosing different ratings.

as to numbers choosing different ratings.

found the work of greatest interest. Girls and boys tallied closely
lowest third groups experienced the greatest difficulty. Upper groups
Only middle third boys failed to see usefulness in this activity.

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (6)	3 (7)	2 (8)	1 (9)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	25	54	13	8	0	42	58	0	21	58	17	4
	Middle Third	0	37	63	0	0	26	66	8	0	31	66	3
	Lowest Third	30	70	0	0	17	78	5	0	0	17	83	0
	Sub-total	13	42	24	1	4	37	37	2	2	29	43	2
Girls	Highest Third	72	28	0	0	0	22	69	9	13	75	9	3
	Middle Third	19	53	28	0	6	41	53	0	0	28	72	0
	Lowest Third	22	72	6	0	11	83	6	0	0	17	78	2
	Sub-total	33	39	10	0	4	35	40	2	4	36	40	2
Total -		46	81	34	1	8	72	77	4	9	62	83	4

Percentages Giving Different Ratings of

Table 51. Opinions of Eighth-Grade Boys and Girls of Different
Ability Levels Concerning the Usefulness, Difficulty,
and Interest of the topic: "A Study of Resemblances and
Differences of Plants and Animals."

Table 52. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study of the Parts of a Plant."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	29	54	17	0	13	58	25	4	4	21	54	21
	Middle Third	0	6	49	45	14	77	9	0	0	17	83	10
	Lowest Third	0	0	35	65	22	74	4	0	0	22	78	0
	Sub-total	7	15	28	30	13	58	9	1	1	16	59	3
Girls	Highest Third	0	34	56	10	10	90	0	0	0	9	82	19
	Middle Third	0	6	56	38	19	78	3	0	0	9	82	19
	Lowest Third	0	0	28	72	28	61	11	0	0	28	72	0
	Sub-total	0	13	41	28	14	64	3	0	0	11	65	16
Total -		7	28	69	58	27	122	12	1	1	27	124	19

This work in botany fundamentals found greatest usefulness with highest third boys and least with lowest third boys, and girls. Majorities of all groups judged the material of little interest and difficult. This item of no use at all.

Table 52. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "Study of the Parts of a Plant."

Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	29	54	17	0	13	58	25	4	4	21	54	21
	Middle Third	0	6	49	45	14	77	9	0	0	17	83	0
	Lowest Third	0	0	35	65	22	74	4	0	0	22	78	0
	Subtotal	7	15	28	30	13	58	9	1	1	16	59	3
Girls	Highest Third	0	34	56	10	10	90	0	0	0	9	82	9
	Middle Third	0	6	56	38	19	78	3	0	0	9	82	9
	Lowest Third	0	0	28	72	28	61	11	0	0	28	72	0
	Sub-total	0	13	41	28	14	64	3	0	0	11	65	6
Total -		7	28	69	58	27	122	12	1	1	27	124	9

This work in botany fundamentals found greatest usefulness with highest third boys and least with lowest third boys, and girls. Majorities of all groups judged the material of little interest and difficult.

Table 53. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Parts of a Flower."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	13	63	13	11	17	50	25	8	4	17	67	12
	Middle Third	0	0	29	71	9	83	8	0	0	9	74	17
	Lowest Third	0	22	74	0	74	26	0	0	6	44	50	0
	Sub-total	3	20	29	26	24	43	8	1	2	17	54	6
Girls	Highest Third	0	19	53	28	6	88	6	0	0	6	82	12
	Middle Third	0	19	78	3	38	62	0	0	0	13	72	15
	Lowest Third	0	17	78	5	33	67	0	0	0	17	78	5
	Sub-total	0	15	56	11	20	60	2	0	0	9	63	10
Total -		3	35	85	37	44	103	10	1	2	26	117	16

Highest third boys voted this topic most useful. Highest third girls found it difficult and of little interest. The latter opinion was held by all other groups. It is worth noting that middle third boys considered this item of no use at all.

Table 53. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Parts of a Flower."

	Sex and Intelligence Group	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	13	63	13	11	17	50	25	8	4	17	67	12
	Middle Third	0	0	29	71	9	83	8	0	0	9	74	17
	Lowest Third	0	22	74	0	0	26	0	0	6	44	50	0
	Sub-total	3	20	29	26	24	43	8	1	2	17	54	6
Girls	Highest Third	0	19	53	28	6	88	6	0	0	6	82	12
	Middle Third	0	19	78	3	38	62	0	0	0	13	72	15
	Lowest Third	0	17	78	5	33	67	0	0	0	17	78	5
	Sub-total	0	15	56	11	20	60	2	0	0	9	63	10
Total -		3	35	85	37	44	103	10	1	2	26	117	16

boys considered this item of no use at all. was held by all other groups. It is worth noting that middle third girls found it difficult and of little interest. The latter opinion Highest third boys voted this topic most useful. Highest third

Table 54. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Seed Production in Flowers."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	8	71	21	0	8	4	88	0	13	46	21	20
	Middle Third	0	9	57	34	12	80	8	0	0	23	74	3
	Lowest Third	0	9	74	17	22	78	0	0	0	17	66	17
	Sub-total	2	22	42	15	11	47	24	0	3	23	50	4
Girls	Highest Third	0	16	53	31	0	6	88	6	0	19	75	6
	Middle Third	0	9	66	25	16	81	3	0	0	16	75	9
	Lowest Third	0	30	70	0	44	56	0	0	0	22	78	0
	Sub-total	0	15	49	17	13	38	29	2	0	15	62	5
Total -		2	37	91	32	24	85	53	2	3	38	112	9

Greatest usefulness and interest in this material was found by highest third boys although they found the work as easy as highest third girls. Majorities of all other groups found the work difficult and of little interest.

Table 54. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Seed Production in Flowers."

Percentages Giving Different Ratings of												
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest		
		# (2)	3 (3)	2 (4)	1 (5)	# (6)	3 (7)	2 (8)	1 (9)	4 (10)	3 (11)	2 (12)
Boys	Highest Third	8	71	21	0	8	4	88	0	13	46	21
	Middle Third	0	9	57	34	12	80	8	0	0	23	74
	Lowest Third	0	9	74	17	22	78	0	0	0	17	66
	Sub-total	2	22	42	15	11	47	24	0	3	23	50
Girls	Highest Third	0	16	53	31	0	6	88	6	0	19	75
	Middle Third	0	9	66	25	16	81	3	0	0	16	75
	Lowest Third	0	30	70	0	44	56	0	0	0	22	78
	Sub-total	0	15	49	17	13	38	29	2	0	15	62
Total -		2	37	91	32	24	85	23	2	3	38	112

Greatest usefulness and interest in this material was found by highest third boys although they found the work as easy as highest third girls. Majorities of all other groups found the work difficult and of little interest.

Table 55. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Man's Discoveries and Accomplishments in Artificial Pollenation."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	8	63	25	4	0	63	33	4	8	25	46	21
	Middle Third	0	20	71	9	0	91	9	0	0	17	66	17
	Lowest Third	0	22	70	8	39	61	0	0	0	0	57	43
	Sub-total	2	27	47	6	9	58	10	1	2	12	47	19
		6	21	49	5	4	26	42	10	2	22	47	7
Girls	Highest Third	3	34	53	10	16	69	12	3	0	60	40	0
	Middle Third	0	19	81	0	16	81	3	0	0	6	69	25
	Lowest Third	0	0	56	44	67	33	0	0	0	17	77	6
	Sub-total	1	17	53	11	22	54	5	1	0	24	48	9
		0	13	82	5	0	9	53	38	3	52	41	3
Total -		3	44	100	17	31	112	15	2	2	36	95	28
Total		6	31	113	8	6	46	76	26	3	39	90	15

Highest third boys found greatest usefulness. All groups considered the work difficult and only highest third girls found it interesting. Boys and girls were in fairly close agreement as to ratings. All other groups voted the subject of little use, or interest.

Table 55. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of Man's Discoveries and Accomplishments in Artificial Pollination."

Percentages Giving Different Ratings of												
Intelligence Group	Sex and	Usefulness				Difficulty				Interest		
		4	3	2	1	4	3	2	1	4	3	2
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Boys	Highest	8	63	25	4	0	63	33	4	8	25	46
	Third											
	Middle	0	20	71	9	0	91	9	0	0	17	66
	Third											
Girls	Lowest	0	22	70	8	39	61	0	0	0	57	43
	Third											
	Sub-total	2	27	47	6	9	58	10	1	2	12	47
Girls	Highest	3	34	53	10	16	69	12	3	0	60	40
	Third											
	Middle	0	19	81	0	16	81	3	0	0	69	25
	Third											
Girls	Lowest	0	0	56	44	67	33	0	0	0	17	77
	Third											
	Sub-total	1	17	53	17	22	54	2	1	0	24	48
Total -		3	44	100	17	31	112	15	2	2	36	95

Highest third boys found greatest usefulness. All groups considered the work difficult and only highest third girls found it interesting. Boys and girls were in fairly close agreement as to ratings.

Table 56. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Work of Bees in Pollenation."

Percentages Giving Different Ratings of													
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	50	25	0	0	0	63	37	8	84	4	4
	Middle Third	0	23	71	6	0	23	74	3	0	9	74	17
	Lowest Third	0	9	78	13	17	78	5	0	0	9	87	4
	Sub-total	6	21	49	5	4	26	42	10	2	22	47	7
Girls	Highest Third	0	13	82	5	0	9	53	38	3	52	41	3
	Middle Third	0	9	88	3	0	9	78	13	0	0	82	18
	Lowest Third	0	17	83	0	11	78	11	0	0	17	77	6
	Sub-total	0	10	69	3	2	20	34	16	1	17	43	8
Total		6	31	113	8	6	46	76	26	3	39	90	15

Lowest third groups considered this work difficult and highest thirds voted it interesting. Highest third boys found the topic most useful. All other groups voted the subject of little use, or interest.

Table 56. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Work of Bees in Pollination."

Percentages Giving Different Ratings of													
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		#	1	2	3	4	1	2	3	4	1	2	3
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	50	25	0	0	0	63	37	8	84	4	4
	Middle Third	0	23	71	6	0	23	74	3	0	9	74	17
	Lowest Third	0	9	78	13	17	78	5	0	0	9	87	4
	Sub-total	6	21	49	5	4	26	42	10	2	22	47	7
Girls	Highest Third	0	13	82	5	0	9	53	38	3	52	41	3
	Middle Third	0	9	88	3	0	9	78	13	0	0	82	18
	Lowest Third	0	17	83	0	11	78	11	0	0	17	77	6
	Sub-total	0	10	69	3	2	26	34	16	1	17	43	8
Total		6	31	113	8	6	46	76	26	3	39	90	15

Lowest third groups considered this work difficult and highest thirds voted it interesting. Highest third boys found the topic most useful. All other groups voted the subject of little use, or interest.

Table 57. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Parts of the Human Body."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	50	46	4	0	8	21	58	13	8	58	30	4
	Middle Third	29	71	0	0	14	72	14	0	31	69	0	0
	Lowest Third	30	22	40	0	13	83	4	0	22	30	39	9
	Sub-total	29	41	12	0	10	47	22	3	18	45	14	2
Girls	Highest Third	66	34	0	0	13	85	2	0	13	87	0	0
	Middle Third	13	72	15	0	34	63	3	0	63	37	0	0
	Lowest Third	0	11	61	28	6	67	27	0	0	6	83	11
	Sub-total	25	36	16	5	16	59	7	0	24	40	15	2
Total -		54	77	28	5	26	106	29	3	42	85	29	4

This topic was judged of greatest use by highest third groups although the boys found it less difficult. The least interest or usefulness was found in the lowest third groups.

Table 27. Opinions of Eighth-Grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Parts of the Human Body."

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		1	2	3	4	1	2	3	4	1	2	3	4
		(5)	(4)	(3)	(2)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	50	46	4	0	8	21	58	13	8	58	30	4
	Middle Third	29	71	0	0	14	72	14	0	31	69	0	0
	Lowest Third	30	22	40	0	13	83	4	0	22	30	32	9
	Sub-total	29	41	12	0	10	47	22	3	18	45	14	2
Girls	Highest Third	66	34	0	0	13	82	2	0	13	87	0	0
	Middle Third	13	72	12	0	34	63	3	0	63	37	0	0
	Lowest Third	0	11	61	28	6	67	27	0	0	6	83	11
	Sub-total	25	36	16	5	16	52	7	0	24	40	15	2
Total -		24	77	28	5	26	106	29	3	42	85	29	4

This topic was judged of greatest use by highest third groups although the boys found it less difficult. The least interest or usefulness was found in the lowest third groups.

Table 58. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Work of Bones and Muscles."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group		Usefulness				Difficulty				Interest			
(1)		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	25	67	8	0	0	38	54	8	8	71	21	0
	Middle Third	74	26	0	0	12	76	12	0	29	69	2	0
	Lowest Third	74	26	0	0	13	35	52	0	61	39	0	0
	Sub-total	49	31	2	0	7	43	29	2	26	50	5	0
Girls	Highest Third	38	60	2	0	6	78	16	0	16	84	0	0
	Middle Third	75	25	0	0	9	82	9	0	56	44	0	0
	Lowest Third	61	39	0	0	0	22	78	0	89	11	0	0
	Sub-total	47	34	1	0	5	55	22	0	39	43	0	0
Total -		96	65	3	0	12	98	51	2	65	93	5	0

Middle and lowest thirds found this item very interesting although the latter group found it easy and very interesting. Majorities of both sexes rated the work very useful, difficult, and interesting.

Ratings of boys and girls were in close agreement. The subject already.

Table 58. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Work of Bones and Muscles."

Sex and Intelligence Group	Percentages Giving Different Ratings of											
	Usefulness				Difficulty				Interest			
(1)	4 (2)	3 (3)	2 (4)	1 (5)	4 (6)	3 (7)	2 (8)	1 (9)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	25	67	8	0	38	54	8	8	71	21	0
	Middle Third	74	26	0	0	12	76	12	0	29	69	0
	Lowest Third	74	26	0	0	13	35	52	0	61	39	0
	Sub-total	49	31	2	0	7	43	29	2	26	50	0
Girls	Highest Third	38	60	2	0	6	78	16	0	16	84	0
	Middle Third	75	25	0	0	9	82	9	0	26	44	0
	Lowest Third	61	39	0	0	0	22	78	0	89	11	0
	Sub-total	47	34	1	0	5	55	22	0	39	43	0
Total -		96	65	3	0	12	98	21	2	65	93	0

Ratings of boys and girls were in close agreement. Both sexes rated the work very useful, difficult, and interesting. The latter group found it easy and very interesting. Majorities of middle and lowest thirds found this item very interesting although

Table 59. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Working of Nerves."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	50	25	25	0	0	25	50	25	29	50	21	0
	Middle Third	14	83	3	0	20	74	6	0	17	71	9	3
	Lowest Third	30	70	0	0	0	52	48	0	30	70	0	0
	Sub-total	24	51	3	0	7	44	25	5	20	53	5	1
Girls	Highest Third	3	69	28	0	28	69	3	0	19	81	0	0
	Middle Third	44	50	6	0	16	82	2	0	34	60	6	0
	Lowest Third	22	78	0	0	0	11	78	11	39	50	11	0
	Sub-total	19	52	11	0	14	50	16	2	24	54	2	0
Total -		43	103	14	0	21	94	41	7	44	107	7	1

Strong majorities of the entire grade rated this topic useful, difficult and interesting. Greatest use was found by middle and lowest groups. Lowest thirds and highest third boys considered the subject easy; one-fourth of the highest boys' group knew the subject already.

Table 59. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Working of Nerves."

Percentages Giving Different Ratings of													
Intelligence Group	Sex and	Usefulness				Difficulty				Interest			
		1	2	3	4	1	2	3	4	1	2	3	4
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	50	25	25	0	0	25	50	25	25	50	25	0
	Middle Third	14	83	3	0	20	74	6	0	17	71	9	3
	Lowest Third	30	70	0	0	0	52	48	0	30	70	0	0
	Sub-total	24	51	3	0	7	44	25	5	20	53	5	1
Girls	Highest Third	3	69	28	0	28	69	3	0	19	81	0	0
	Middle Third	44	50	6	0	16	82	2	0	34	60	6	0
	Lowest Third	22	78	0	0	0	11	78	11	39	50	11	0
	Sub-total	19	52	11	0	14	50	16	2	24	54	2	0
Total -		43	103	14	0	21	94	41	7	44	107	7	1

Strong majorities of the entire grade rated this topic useful, difficult and interesting. Greatest use was found by middle and lowest groups. Lowest thirds and highest third boys considered the subject easy; one-fourth of the highest boys' group knew the subject already.

Table 60. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Effect of Tobacco upon the Body."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	42	50	8	0	0	25	71	4	42	46	12	0
	Middle Third	14	77	9	0	0	20	74	6	23	77	0	0
	Lowest Third	35	65	0	0	0	9	65	26	13	57	30	0
	Sub-total	23	54	4	0	0	15	58	9	21	51	7	0
Girls	Highest Third	22	66	9	3	0	6	88	6	34	66	0	0
	Middle Third	41	59	0	0	0	31	60	9	0	78	22	0
	Lowest Third	22	78	0	0	0	22	78	0	22	78	0	0
	Sub-total	24	53	3	1	0	16	61	5	15	59	7	0
Total -		47	107	7	1	0	31	119	14	36	110	14	0

This material was of decided usefulness to all but eight pupils in the entire grade. Heavy majorities rated it easy and interesting.

of all groups found it easy or decided that they knew it already. Only thirteen in the grade gave it a low interest rating.

Table 60. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Effect of Tobacco upon the Body."

Percentages Giving Different Ratings of												
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest		
		#	1	2	3	#	1	2	3	#	1	2
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Boys	Highest Third	42	50	8	0	0	25	71	4	42	46	12
	Middle Third	14	77	9	0	0	20	74	6	23	77	0
	Lowest Third	32	62	0	0	0	9	62	26	13	57	30
	Sub-total	23	54	4	0	0	15	58	9	21	57	7
Girls	Highest Third	22	66	9	3	0	6	88	6	34	66	0
	Middle Third	41	29	0	0	0	31	60	9	0	78	22
	Lowest Third	22	78	0	0	0	22	78	0	22	78	0
	Sub-total	24	53	3	1	0	16	61	5	15	59	7
Total -		47	107	7	1	0	31	119	14	36	110	14

This material was of decided usefulness to all but eight pupils in the entire grade. Heavy majorities rated it easy and interesting.

Table 61. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Effect of Alcohol upon the Body."

		Percentages Giving Different Ratings of											
Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	75	25	0	0	0	29	58	13	13	54	21	12
	Middle Third	40	60	0	0	0	23	74	3	31	63	6	0
	Lowest Third	48	52	0	0	0	9	65	26	30	65	5	0
	Sub-total	43	39	0	0	0	17	55	9	21	50	7	1
Girls	Highest Third	72	25	3	0	0	13	78	0	16	72	9	3
	Middle Third	82	18	0	0	0	6	38	56	38	62	0	0
	Lowest Third	83	17	0	0	0	6	67	27	27	73	0	0
	Sub-total	64	17	1	0	0	7	50	25	22	56	4	1
Total -		107	56	1	0	0	24	105	34	43	106	11	2

Apparently the grade held the same opinions concerning alcohol as tobacco. All but one pupil rated it useful or very useful. Majorities of all groups found it easy or decided that they knew it already. Only thirteen in the grade gave it a low interest rating.

Table 61. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study of the Effect of Alcohol upon the Body."

Percentages Giving Different Ratings of												
Intelligence Group	Sex and	Usefulness				Difficulty				Interest		
		4	3	2	1	4	3	2	1	4	3	2
(1)		(5)	(4)	(3)	(2)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Boys	Highest	75	25	0	0	0	29	58	13	13	54	12
	Third	40	60	0	0	0	23	74	3	31	63	6
	Middle	48	52	0	0	0	9	65	26	30	65	5
	Lowest	43	39	0	0	0	17	55	9	21	50	7
Sub-total		43	39	0	0	0	17	55	9	21	50	7
Girls	Highest	72	25	3	0	0	13	78	0	16	75	9
	Third	82	18	0	0	0	6	38	56	38	62	0
	Middle	83	17	0	0	0	6	67	27	27	73	0
	Lowest	64	17	1	0	0	7	50	25	22	56	4
Sub-total		64	17	1	0	0	7	50	25	22	56	4
Total -		107	56	1	0	0	24	105	34	43	106	11

Apparently the grade held the same opinions concerning alcohol as tobacco. All but one pupil rated it useful or very useful. Majorities of all groups found it easy or decided that they knew it already. Only thirteen in the grade gave it a low interest rating.

Table 62. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, Difficulty, and Interest of the topic: "A Study and Discussion of Tobacco and Alcohol Propaganda."

Sex and Intelligence Group		Percentages Giving Different Ratings of											
		Usefulness				Difficulty				Interest			
(1)		4	3	2	1	4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	42	58	0	0	8	17	71	4	50	33	17	0
	Middle Third	63	37	0	0	0	17	74	9	14	83	3	0
	Lowest Third	39	61	0	0	4	17	75	4	9	78	13	0
	Sub-total	41	41	0	0	3	14	62	5	19	55	5	0
Girls	Highest Third	82	18	0	0	0	9	82	9	9	91	0	0
	Middle Third	56	44	0	0	0	41	53	6	28	72	0	0
	Lowest Third	44	56	0	0	0	11	33	56	11	78	11	0
	Sub-total	52	30	0	0	0	18	51	11	14	69	2	0
Total -		93	71	0	0	3	32	113	16	33	124	7	0

This is the only item on the questionnaire in which no votes were cast for little or no use for the topic. All groups found the work easy with a majority of the lowest third girls conceding that they knew the material before. The work was of decided interest to all groups being of greatest interest to highest third boys.

of greatest interest to highest third boys.

material before. The work was of decided interest to all groups being with a majority of the lowest third girls conceding that they knew the east for little or no use for the topic. All groups found the work easy

This is the only item on the questionnaire in which no votes were

Sex and Intelligence Group	(1)	Usefulness				Difficulty				Interest			
		4	3	2	1	4	3	2	1	4	3	2	1
		(5)	(3)	(4)	(2)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Boys	Highest Third	42	58	0	0	8	17	71	4	50	33	17	0
	Middle Third	63	37	0	0	0	17	74	9	14	83	3	0
	Lowest Third	39	61	0	0	4	17	75	4	9	78	13	0
	Sub-total	41	41	0	0	3	14	62	5	19	55	5	0
Girls	Highest Third	82	18	0	0	0	9	82	9	9	91	0	0
	Middle Third	56	44	0	0	0	41	53	6	28	72	0	0
	Lowest Third	44	56	0	0	0	11	33	56	11	78	11	0
	Sub-total	52	30	0	0	0	18	51	11	14	69	5	0
Total -		93	71	0	0	3	32	113	16	33	124	7	0

Percentages Giving Different Ratings of

Tobacco and Alcohol Propaganda." and interest of the topic: "A Study and Discussion of Ability Levels Concerning the Usefulness, Difficulty, Table 62. Opinions of Eighth-grade Boys and Girls of Different

Table 63. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, and Interest of Classroom Experiments and Demonstrations.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	71	29	0	0	100	0	0	0
	Middle Third	74	26	0	0	91	9	0	0
	Lowest Third	61	39	0	0	83	17	0	0
	Sub-total	56	26	0	0	75	7	0	0
Girls	Highest Third	91	9	0	0	85	15	0	0
	Middle Third	85	15	0	0	88	12	0	0
	Lowest Third	67	33	0	0	83	17	0	0
	Sub-total	67	15	0	0	70	12	0	0
Total -		123	41	0	0	145	19	0	0
Total -		102	61	1	0	54	97	12	1

All groups rated this activity useful or very useful and interesting or very interesting. All girls rated it interesting or very interesting. Lowest third boys found least interest.

Table 63. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness, and Interest of Classroom Experiments and Demonstrations.

Sex and Intelligence Group	(1)	Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	71	29	0	0	100	0	0	0
	Middle Third	74	26	0	0	91	9	0	0
	Lowest Third	61	39	0	0	83	17	0	0
	Sub-total	26	26	0	0	75	7	0	0
Girls	Highest Third	91	9	0	0	85	15	0	0
	Middle Third	85	15	0	0	88	12	0	0
	Lowest Third	67	33	0	0	83	17	0	0
	Sub-total	67	15	0	0	70	15	0	0
Total -		123	41	0	0	145	19	0	0

All groups rated this activity useful or very useful

and interesting or very interesting.

Table 64. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Blackboard Diagrams. and Material.

		Percentages Giving Different Ratings of							
Sex and Intelligence Group		Usefulness				Interest			
		4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	63	37	0	0	42	58	0	0
	Middle Third	63	37	0	0	23	74	3	0
	Lowest Third	74	26	0	0	26	22	48	4
	Sub-total	56	26	0	0	24	45	12	1
Girls	Highest Third	25	75	0	0	9	91	0	0
	Middle Third	82	18	0	0	82	18	0	0
	Lowest Third	67	27	6	0	6	94	0	0
	Sub-total	46	35	1	0	30	52	0	0
Total -		102	61	1	0	54	97	12	1

Only one pupil found little use in this topic. All girls rated it interesting or very interesting. Lowest third boys found least interest.

Table 64. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Blackboard Diagrams.

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Interest			
		#	3	2	1	#	3	2	1
		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	63	37	0	0	42	58	0	0
	Middle Third	63	37	0	0	23	74	3	0
	Lowest Third	74	26	0	0	26	22	48	4
	Sub-total	56	26	0	0	24	45	12	1
Girls	Highest Third	25	75	0	0	9	91	0	0
	Middle Third	82	18	0	0	82	18	0	0
	Lowest Third	67	27	6	0	6	94	0	0
	Sub-total	46	35	1	0	30	52	0	0
Total -		102	61	1	0	54	97	12	1

Only one pupil found little use in this topic. All girls rated it interesting or very interesting. Lowest third boys found least interest.

Table 65. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Bulletin Board Material.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	63	29	8	0	54	46	0	0
	Middle Third	31	69	0	0	63	37	0	0
	Lowest Third	61	39	0	0	78	22	0	0
	Sub-total	40	41	1	0	53	29	0	0
Girls	Highest Third	13	84	3	0	50	41	9	0
	Middle Third	16	84	0	0	56	44	0	0
	Lowest Third	50	38	6	0	72	22	6	0
	Sub-total	22	55	2	0	47	32	3	0
Total -		62	96	3	0	100	61	3	0

All but three pupils found use for this topic. By the same proportions they found the classroom bulletin board interesting.

proportions they found the classroom bulletin board interesting. All but three pupils found use for this topic. By the same

Sex and Intelligence Group	(1)	Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	63	29	8	0	54	46	0	0
	Middle Third	31	69	0	0	63	37	0	0
	Lowest Third	61	39	0	0	78	22	0	0
	Sub-total	40	41	1	0	53	29	0	0
Girls	Highest Third	13	84	3	0	50	41	9	0
	Middle Third	16	84	0	0	56	44	0	0
	Lowest Third	50	38	6	0	75	25	6	0
	Sub-total	22	52	2	0	47	32	3	0
Total -		62	96	3	0	100	61	3	0

Percentages Giving Different Ratings of

Interest of Bulletin Board Material.

Ability Levels Concerning the Usefulness and

Table 65. Opinions of Eighth-grade Boys and Girls of Different

Table 66. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Sound and Silent Films used in Class.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	79	21	0	0	96	0	4	0
	Middle Third	89	11	0	0	97	3	0	0
	Lowest Third	87	13	0	0	92	8	0	0
	Sub-total	69	13	0	0	78	3	1	0
Girls	Highest Third	91	9	0	0	100	0	0	0
	Middle Third	85	15	0	0	91	9	0	0
	Lowest Third	94	6	0	0	94	6	0	0
	Sub-total	73	9	0	0	78	4	0	0
Total -		142	22	0	0	156	7	1	0

All groups rated these audio-visual aids very useful and very interesting.

Table 6C. Opinions of Eighth-Grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Sound and Silent Films Used in Class.

Percentages Giving Different Ratings of

Sex and Intelligence Group	Usefulness				Interest			
	4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	79	21	0	0	0	4	0
	Middle Third	89	11	0	0	3	0	0
	Lowest Third	87	13	0	0	8	0	0
	Sub-total	89	13	0	0	3	1	0
	Highest Third	91	9	0	0	0	0	0
Girls	Middle Third	85	15	0	0	9	0	0
	Lowest Third	94	6	0	0	0	0	0
	Sub-total	93	9	0	0	4	0	0
	Total -	142	22	0	0	15	1	0

All groups rated these audio-visual aids very useful and very interesting.

Table 67. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Textbooks used in Class.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	54	29	17	0	63	25	6	6
	Middle Third	77	23	0	0	20	74	6	0
	Lowest Third	0	52	48	0	0	4	65	31
	Sub-total	40	27	15	0	22	33	18	9
Girls	Highest Third	66	31	3	0	19	75	6	0
	Middle Third	66	31	3	0	19	62	19	0
	Lowest Third	0	72	28	0	0	17	72	11
	Sub-total	42	33	7	0	12	47	21	2
Total -		82	60	22	0	34	80	39	11

Lowest opinions of textbook usefulness and interest were held by lowest third groups.

Table 67. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Textbooks used in Class.

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Interest			
		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	54	29	17	0	63	25	6	6
	Middle Third	77	23	0	0	20	74	6	0
	Lowest Third	0	52	48	0	0	4	65	31
	Sub-total	40	27	15	0	22	33	18	9
Girls	Highest Third	66	31	3	0	19	75	6	0
	Middle Third	66	31	3	0	19	62	19	0
	Lowest Third	0	72	28	0	0	17	75	11
	Sub-total	42	33	7	0	12	47	21	2
Total -		82	60	22	0	34	80	39	11

Lowest opinions of textbook usefulness and interest were held by lowest third groups.

Table 68. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Class Discussions.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
(1)									
Boys	Highest Third	63	37	0	0	58	33	9	0
	Middle Third	69	31	0	0	71	25	4	0
	Lowest Third	57	43	0	0	70	30	0	0
	Sub-total	55	27			55	23	4	0
Girls	Highest Third	78	22	0	0	56	44	0	0
	Middle Third	72	28	0	0	69	25	6	0
	Lowest Third	67	33	0	0	67	28	5	0
	Sub-total	60	22	0	0	52	27	3	0
Total -		115	49			107	50	7	0

Majorities of all groups rated class discussion very useful and very interesting.

Table 68. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Class Discussions.

Percentages Giving Different Ratings of

Sex and Intelligence Group	Usefulness				Interest			
	1	2	3	4	1	2	3	4
(1)	(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	63	37	0	0	58	33	9
	Middle Third	69	31	0	0	71	25	4
	Lowest Third	57	43	0	0	70	30	0
	Sub-total	55	27			55	23	4
Girls	Highest Third	78	22	0	0	56	44	0
	Middle Third	72	28	0	0	69	25	6
	Lowest Third	67	33	0	0	67	28	5
	Sub-total	60	22	0	0	52	27	3
Total -		115	49			107	50	7

Majorities of all groups rated class discussion very

useful and very interesting.

Table 69. Opinions of Eighth Grade Boys and Girls of Different Ability Levels Concerning the Usefulness, and Interest of Taking Notes on Class Reading.

		Percentages Giving Different Ratings of							
Sex and Intelligence Group		Usefulness				Interest			
		4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	13	46	41	0	0	58	38	4
	Middle Third	31	69	0	0	12	71	17	0
	Lowest Third	9	39	48	4	0	44	52	4
	Sub-total	16	44	21	1	4	49	27	2
Girls	Highest Third	9	91	0	0	13	78	9	0
	Middle Third	19	78	3	0	19	81	0	0
	Lowest Third	0	6	39	55	0	11	78	11
	Sub-total	9	55	8	10	12	51	17	2
Total -		25	99	29	11	16	100	44	4

Lowest groups judged the taking of notes of little use or interest. Highest third boys were almost evenly divided between useful and little use. Majorities of the grade considered this activity useful and interesting.

Table 69. Opinions of Eighth Grade Boys and Girls of Different Ability Levels Concerning the Usefulness, and Interest of Taking Notes on Class Reading.

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	13	46	41	0	0	58	38	4
	Middle Third	31	69	0	0	12	71	17	0
	Lowest Third	9	39	48	4	0	44	52	4
	Sub-total	16	44	21	1	4	49	27	2
Girls	Highest Third	9	91	0	0	13	78	9	0
	Middle Third	19	78	3	0	19	81	0	0
	Lowest Third	0	6	39	55	0	11	78	11
	Sub-total	9	55	8	10	12	51	17	2
Total -		25	99	29	11	16	100	44	4

Lowest groups judged the taking of notes of little use or interest. Highest third boys were almost evenly divided between useful and little use. Majorities of the grade considered this activity useful and interesting.

Table 70. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Breaking Main Problem into Several Subproblems.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	63	21	16	0	71	17	8	4
	Middle Third	14	77	9	0	53	47	0	0
	Lowest Third	26	57	17	0	0	48	52	0
	Sub-total	24	45	13	0	36	31	14	1
Girls	Highest Third	13	87	0	0	69	28	3	0
	Middle Third	28	69	3	0	13	85	2	0
	Lowest Third	0	44	39	17	0	11	89	0
	Sub-total	13	58	8	3	26	38	18	0
Total -		37	103	21	3	62	69	32	1
Sub-total		43	36	3	0	42	39	1	0

Lowest third groups rated this procedure of little use or interest except for the boys who gave a majority to the rating useful. Boys and girls in the highest and middle level found the item useful, or very useful; interesting or very interesting. All the boys' ratings went to either very useful or useful and very interesting or interesting. With the exception of four the same was true of the girls. Highest ratings of usefulness and interest were accorded these free booklets by middle and lowest third groups.

Table 70. Opinions of Eighth-Grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Breaking Main Problem into Several Subproblems.

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Interest			
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Boys	Highest Third	63	21	16	0	71	17	8	4
	Middle Third	14	77	9	0	53	47	0	0
	Lowest Third	26	57	17	0	0	48	52	0
	Sub-total	24	45	13	0	36	31	14	1
	Highest Third	13	87	0	0	69	28	3	0
Girls	Middle Third	28	69	3	0	13	85	2	0
	Lowest Third	0	44	39	17	0	11	89	0
	Sub-total	13	58	8	3	26	38	18	0
	Total -	37	103	21	3	62	69	32	1

Lowest third groups rated this procedure of little use or interest except for the boys who gave a majority to the rating useful. Boys and girls in the highest and middle level found the item useful, or very useful; interesting or very interesting.

Table 71. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Free Workbooks by Pepsi-Cola on Steel, Oil, Lumber, Transportation, Glass, Cotton, Electricity and Movies.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	62	0	0	42	58	0	0
	Middle Third	74	26	0	0	74	26	0	0
	Lowest Third	87	13	0	0	74	26	0	0
	Sub-total	55	27	0	0	53	29	0	0
Girls	Highest Third	19	75	6	0	9	88	3	0
	Middle Third	69	31	0	0	71	29	0	0
	Lowest Third	83	11	6	0	78	22	0	0
	Sub-total	43	36	3	0	42	39	1	0
Total -		98	63	3	0	95	68	1	0

All the boys' ratings went to either very useful or useful and very interesting or interesting. With the exception of four the same was true of the girls. Highest ratings of usefulness and interest were accorded these free booklets by middle and lowest third groups.

Table 71. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Tree Workbooks by Pepsi-Cola on Steel, Oil, Lumber, Transportation, Glass, Cotton, Electricity and Movies.

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Interest			
		4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	38	62	0	0	42	58	0	0
	Middle Third	74	26	0	0	74	26	0	0
	Lowest Third	87	13	0	0	74	26	0	0
	Sub-total	55	27	0	0	53	29	0	0
	Highest Third	19	75	6	0	9	88	3	0
Girls	Middle Third	69	31	0	0	71	29	0	0
	Lowest Third	83	17	6	0	78	22	0	0
	Sub-total	43	36	3	0	45	39	1	0
	Total -	98	63	3	0	95	68	1	0

All the boys' ratings went to either very useful or useful and very interesting or interesting. With the exception of four the same was true of the girls. Highest ratings of usefulness and interest were accorded these tree booklets by middle and lowest third groups.

Table 72. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Class Reference Books.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4	3	2	1	4	3	2	1
		(1)	(2)	(3)	(4)	(5)	(10)	(11)	(12)
Boys	Highest Third	8	84	8	0	29	50	13	8
	Middle Third	74	26	0	0	69	31	0	0
	Lowest Third	26	65	9	0	9	61	30	0
	Sub-total	34	41	7	0	33	37	10	2
Girls	Highest Third	16	84	0	0	31	69	0	0
	Middle Third	75	25	0	0	19	81	0	0
	Lowest Third	17	78	5	0	17	67	16	0
	Sub-total	32	48	2	0	19	60	3	0
Total -		66	89	9	0	52	97	13	2

Class reference material was found of use and interest by all groups. was very useful to all groups and very interesting to all levels except in the case of highest third girls, where half judged the material interesting.

Table 72. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Class Reference Books.

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	8	84	8	0	29	50	13	8
	Middle Third	74	26	0	0	69	31	0	0
	Lowest Third	26	62	9	0	9	61	30	0
	Sub-total	34	41	7	0	33	37	10	2
Girls	Highest Third	16	84	0	0	31	69	0	0
	Middle Third	75	25	0	0	19	81	0	0
	Lowest Third	17	78	5	0	17	67	16	0
	Sub-total	32	48	2	0	19	60	3	0
Total -		66	89	9	0	52	97	13	2

Class reference material was found of use and interest by

all groups.

Table 73. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of File of Boxes of Illustrative Science Material.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4	3	2	1	4	3	2	1
		(1)	(2)	(3)	(4)	(5)	(10)	(11)	(12)
Boys	Highest Third	63	25	4	0	67	29	4	0
	Middle Third	66	31	0	0	57	34	0	0
	Lowest Third	78	22	0	0	78	22	0	0
	Sub-total	56	22	1	0	56	25	1	0
Girls	Highest Third	72	25	0	0	44	50	6	0
	Middle Third	82	18	0	0	63	37	0	0
	Lowest Third	94	6	0	0	78	22	0	0
	Sub-total	66	15	0	0	48	32	2	0
Total -		122	37	1	0	104	57	3	0

The file of boxes of illustrative material for supplementing class texts was very useful to all groups and very interesting to all levels except in the case of highest third girls, where half judged the material interesting.

Table 73. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of File of Boxes of Illustrative Science Material.

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	63	25	4	0	67	29	4	0
	Middle Third	66	31	0	0	57	34	0	0
	Lowest Third	78	22	0	0	78	22	0	0
	Sub-total	56	22	1	0	56	22	1	0
Girls	Highest Third	72	25	0	0	44	50	6	0
	Middle Third	82	18	0	0	63	37	0	0
	Lowest Third	94	6	0	0	78	22	0	0
	Sub-total	66	15	0	0	48	32	2	0
Total -		122	37	1	0	104	57	3	0

The file of boxes of illustrative material for supplementing class texts was very useful to all groups and very interesting to all levels except in the case of highest third girls, where half judged the material interesting.

Table 74. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Free Science Series of Booklets by Westinghouse.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
(1)		4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	46	42	4	0	46	38	13	0
	Middle Third	50	42	8	0	54	38	8	0
	Lowest Third	63	34	3	0	66	31	0	0
	Sub-total	41	34	4	0	53	24	3	0
		12	34	34	1	14	28	36	1
Girls	Highest Third	25	75	0	0	3	85	12	0
	Middle Third	0	75	25	0	6	63	25	3
	Lowest Third	22	75	3	0	53	47	0	0
	Sub-total	19	61	1	0	27	50	5	0
		12	79	69	2	17	38	21	7
Total -		60	95	5	0	80	74	8	0

These free science pamphlets were of greatest usefulness and interest to boys. Girls of all levels of ability closely agreed on their reactions with three-fourths of each rating the material useful.

Table 74. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Free Science Series of Booklets by Westinghouse.

Sex and Intelligence Group	(1)	Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	46	42	4	0	46	38	13	0
	Middle Third	63	34	3	0	66	31	0	0
	Lowest Third	32	52	2	0	83	17	0	0
	Sub-total	41	34	4	0	53	24	3	0
Girls	Highest Third	22	72	0	0	3	82	12	0
	Middle Third	22	72	3	0	23	47	0	0
	Lowest Third	22	72	0	0	20	44	6	0
	Sub-total	19	61	1	0	27	50	5	0
Total -		60	92	2	0	80	74	8	0

These free science pamphlets were of greatest usefulness and interest to boys. Girls of all levels of ability closely agreed on their reactions with three-fourths of each rating the material useful.

Table 75. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of School Library Encyclopedias - Book of Knowledge, Compton's Pictured Encyclopedia.

Sex and Intelligence Group		Percentages Giving Different Ratings of							
		Usefulness				Interest			
		4	3	2	1	4	3	2	1
(1)		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	50	42	8	0	54	38	8	0
	Middle Third	0	66	31	0	3	53	44	0
	Lowest Third	0	4	92	4	0	0	83	17
	Sub-total	12	34	34	1	14	28	36	4
Girls	Highest Third	0	75	25	0	6	63	25	3
	Middle Third	0	56	41	0	3	28	66	3
	Lowest Third	0	17	78	5	0	6	88	6
	Sub-total	0	45	35	1	3	30	45	3
Total -		12	79	69	2	17	58	81	7

Encyclopedias were found of most use and interest by highest third groups and of least use and interest by lowest third groups.

Table 75. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of School Library Encyclopedias - Book of Knowledge, Compton's Pictured Encyclopedias.

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Interest			
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Boys	Highest Third	50	45	8	0	54	38	8	0
	Middle Third	0	66	31	0	3	53	44	0
	Lowest Third	0	4	92	4	0	0	83	17
	Sub-total	12	34	34	1	14	28	36	4
Girls	Highest Third	0	75	25	0	6	63	25	3
	Middle Third	0	56	41	0	3	28	66	3
	Lowest Third	0	17	78	5	0	6	88	6
	Sub-total	0	45	35	1	3	30	45	3
Total -		12	79	69	2	17	58	81	7

Encyclopedias were found of most use and interest by highest third groups and of least use and interest by lowest third groups.

Table 76. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Classroom Wall Posters.

		Percentages Giving Different Ratings of							
Sex and Intelligence Group	(1)	Usefulness				Interest			
		4	3	2	1	4	3	2	1
		(2)	(3)	(4)	(5)	(10)	(11)	(12)	(13)
Boys	Highest Third	63	33	4	0	58	33	0	0
	Middle Third	51	46	3	0	31	66	3	0
	Lowest Third	9	39	52	0	70	30	0	0
	Sub-total	35	33	14	0	41	38	1	0
Girls	Highest Third	0	63	31	6	63	34	3	0
	Middle Third	53	47	0	0	3	63	34	0
	Lowest Third	0	6	78	11	56	44	0	0
	Sub-total	17	36	24	4	31	39	12	0
Total -		52	69	38	4	72	77	13	0

Middle third groups found classroom wall posters most useful as did also highest third group. Lowest third groups saw little usefulness.

in astronomy except highest third boys. General agreement was found in both sexes as to the usefulness and interest of the work on Air. Elements lacked usefulness appeal to all except highest ability groups. It is interesting to conjecture at this point

Table 76. Opinions of Eighth-grade Boys and Girls of Different Ability Levels Concerning the Usefulness and Interest of Classroom Wall Posters.

Percentages Giving Different Ratings of

Sex and Intelligence Group	(1)	Usefulness				Interest			
		4 (2)	3 (3)	2 (4)	1 (5)	4 (10)	3 (11)	2 (12)	1 (13)
Boys	Highest Third	63	33	4	0	58	33	0	0
	Middle Third	51	46	3	0	31	66	3	0
	Lowest Third	9	39	52	0	70	30	0	0
	Sub-total	35	33	14	0	41	38	1	0
Girls	Highest Third	0	63	31	6	63	34	3	0
	Middle Third	53	47	0	0	3	63	34	0
	Lowest Third	0	6	78	11	56	44	0	0
	Sub-total	17	36	54	4	31	39	15	0
Total -		52	69	38	4	72	77	13	0

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CHAPTER IV.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

It is perhaps unnecessary to call the reader's attention to the fact that this is not a study of actual usefulness, difficulty, and interest under all conditions, but rather a study made under certain existing teaching conditions.

There appears no significant connection between the three criteria used as basis for the ratings. A difficult topic may be useful, or interesting, or both. Interesting topics were not found to be necessarily useful. Useful items were not always interesting. It is at once evident that pupils exercised much independence of thought in making their choices. A general agreement between sexes in the grade is noted and also between sexes in the different ability groupings. Pupils of highest ability groups were more aware of the usefulness of material introductory to advanced science. Generally speaking, all groups were aware of implications dealing with their own environment. As would be expected, lowest groups were little interested in the theoretical. Topics of practical everyday use were of common interest. i.e. tire pump, fire extinguishers, workbooks were found least useful by highest third groups. Both sexes saw little use in astronomy except highest third boys. General agreement was found in both sexes as to the usefulness and interest of the work on Air. Elements lacked usefulness appeal to all except highest ability groups. It is interesting to conjecture at this point

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as to whether the atom bomb, which was introduced after this
 questionnaire was given, would have affected class interest
 in atomic energy and elements. Air conditioning possessed
 greater interest appeal for boys and proved of greater
 difficulty for girls. Regardless of ability groups, the work
 with the siphon illustrating unbalanced air pressure was
 rated as of little use and difficult to handle. Breathing, as
 a subtopic of Air, was recognized as useful by only the highest
 third groups. In spite of the novelty attached to its use,
 class work with the microscope was uninteresting and useless
 to lowest ability groups. A study of man's classification of
 living things and their points of similarity and difference,
 although useful and difficult to middle and highest groups,
 was allegedly known already by lowest groups. Flowers and
 plants had little interest appeal as handled. Alcohol and
 tobacco, as well as propaganda efforts in advertising them,
 were rated as useful and interesting even in lowest ability
 groups where most of the boys were habitual smokers. A summary
 of TEACHING METHOD ratings gives highest ratings of usefulness
 and interest to sound and silent films, classroom experiments
 and demonstrations, blackboard diagrams, class discussion,
 reference materials, and wall posters. The latter were large
 illustrations in color of developments in transportation,
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lowest third boys. Note taking in silent reading of texts and reference materials was rated as of little help by lowest third groups only.

Recommendations

These recommendations are made for what they are worth and merely represent some of the things the writer would do if he were to repeat the teaching of eighth-grade-science under similar circumstances with the idea of increasing interest and usefulness and decreasing difficulty.

Topic AIR --- More pupil participation and encouragement to do home experiments would be more interesting and present challenges to the pupil. The work with siphons needs a better buildup and simpler illustrations to precede it. The medicine dropper, fountain pen, and soda straw could be used to show effects of unbalanced air pressure before the siphon is introduced. Its commercial use in washing machines, flush tanks, and common pantry cream separators could be utilized to create interest and secure proper concepts. Using the siphon as a point of departure, early experiments to measure the weight of air by noting its ability to support a column of liquid could be introduced. From this point the use of mercury and its advantages over water or other liquids could be handled in a study of the mercury barometer. Classroom construction of a workable mercury barometer would be interesting. The relation of pressure changes to weather could next be studied with weather records being a class project.

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Rocks and Soil -- Pupils at this age are natural collectors and use could be made of this tendency by starting a school museum with common rocks constituting the first specimens. This first contribution could be the motivation for the first field excursion to study local rock formations. This would require a carefully planned itinerary and would probably have to be repeated several times. Dr. Elwood Heiss of Stroudberg, Pennsylvania Teachers' College says: ^{1/}

"The natural instinct for collecting and hoarding many children seem to have should be utilized for building up the museum as well as for motivating and vitalizing the subject matter of science courses."

One of the chief aims of science is to make children intimately acquainted with the nature of the world in which they live. Nearby public museums should be contacted to determine availability of specimens and models on a loan or rental basis. Wider use could be made of teaching films now available showing in a very interesting way the work of erosion and weathering agents. It is quite likely that sand table models showing meandering rivers and silt carrying ability of streams would be an efficient means of visually portraying our changing earth.

Plants -- Instead of commercially made slides the work could be made more interesting by making the slides in class using material brought from home. The unit on the frog should be developed more from the visual standpoint utilizing flat

^{1/} Dr. Elwood Heiss et al, Modern Methods and Materials for Teaching Science. Macmillan, 1940. page 192.

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pictures from nature periodicals, film strips, slides and bulletin board display material. The main concept here is the fact that frogs are an example of metamorphosis in animal life. Tadpoles and frog's eggs may be brought in by pupils when obtainable and the eggs may be hatched without difficulty in a large bowl left in the sun. Eggs, embryos, and newly hatched frogs can be examined under the school microscope. Tadpoles in the process of becoming adult frogs are an interesting subject. This activity, however, should be handled in the spring.

General -- Lowest groups need greater practice in simple outlining stressing recognition of important facts and the ability to separate grain from chaff. Lowest groups dislike to write complete sentences when doing silent reading. This may be because of their extremely poor handwriting and an inability to spell correctly. Drill in selecting important thoughts would improve their ability to summarize. It would be wise to capitalize upon the interest in experimentation by encouraging home experimenting and more pupil participation in classroom demonstrations. In all cases the problem should be approached in a scientific manner. This involves not only previous observation but careful experimentation to formulate hypotheses and logical conclusions as a result of the experiment. Following this there should be an attempt on the part of the pupil to discover further applications of the hypotheses.

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Science Clubs -- The science club is a useful means of stimulating pupil participation and initiative in learning. This activity offers him an opportunity for specialization which he does not have in the class. In the school under discussion there was no science club for eighth grade pupils although there was one for grade nine restricted to boys. This activity has so many possibilities that such a club should be made available to all pupils regardless of sex or grade. Such clubs could visit power plants, telephone exchanges, greenhouses, filtration plants, dairies and local industries to observe man's dependence upon mechanical principles and natural resources as already studied in school. This activity has its vocational guidance values, also, affording a glimpse of industry in its natural habitat.

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This booklet contains a list of all the topics we covered in the grade science this year. You are to give your opinion of each topic from each of these standpoints: First, how useful did you find the topic; second, how interesting did it seem; and third, how important was it to you? Read the directions carefully and put a check mark in the column opposite each topic that best describes your opinion.

DO NOT WRITE YOUR NAME

Section 1. How Useful Did You Find These Topics?

Put a check mark in one of the four columns to show how useful you found the topic to be.

CHAPTER V.

Very Useful	Useful	Not very useful	No use at all

APPENDIX

SAMPLE FORM OF QUESTIONNAIRE USED

1. Description and definition of science
2. Discussion of other sciences
3. The chemical elements
4. Definition and discussion of matter
5. States and forms of matter
6. States of water
7. Water's part in making life possible
8. Water in plants.
9. The water cycle in nature
10. The sun and its family
11. Important facts about the earth
12. The moon
13. Other heavenly bodies
14. Gases that make up the air
15. Air pressure
16. Air and fire
17. Preparation of oxygen
18. Moving of air spread a fire
19. Building and controlling a fire
20. Elements--chemical formulas--atoms
21. Air in the home (humidity)
22. Measuring humidity with the hygrometer
23. Air conditioning
24. The tire pump
25. The siphon
26. Breathing
27. Diseases of the breathing system
28. Cave man and the discovery of fire
29. Methods of making a fire
30. What happens when a thing burns

CHAPTER V.

APPENDIX

SAMPLE FORM OF QUESTIONNAIRE USED

This booklet contains a list of all the topics we covered in 8th grade science this year. You are to give your opinion of each topic from each of these standpoints: First, how useful did you find the topic; second, how difficult did it seem; and third, how interesting was it to you? Read the directions carefully and put a check mark () in the column opposite each topic that best describes your opinion.

DO NOT SIGN YOUR NAME

Section 1. How Useful Did You Find These Topics?

Put a check mark in one of the four columns to show how useful you found the topic to be.

	<u>Very</u> <u>Useful</u>	<u>Useful</u>	<u>Very</u> <u>little</u> <u>use</u>	<u>No use</u> <u>at all</u>
1. Description and definition of elementary science				
2. Discussion of other sciences				
3. The chemical make-up of water				
4. Definition and discussion of matter				
5. Kinds and forms of matter				
6. Forms of water				
7. Water's part in making life possible				
8. Water in plants				
9. The water cycle in nature				
10. The sun and its family				
11. Important facts about the earth				
12. The moon				
13. Other heavenly bodies				
14. Gases that make up the air				
15. Air pressure				
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DO NOT SIGN YOUR NAME

Section I. How Useful Did You Find These Topics?

Put a check mark in one of the four columns to show how useful you found the topic to be.

Very little use	Very useful	No use at all
-----------------------	----------------	------------------

1. Description and definition of elementary science
2. Discussion of other sciences
3. The chemical make-up of water
4. Definition and discussion of matter
5. Kinds and forms of matter
6. Forms of water
7. Water's part in making life possible
8. Water in plants
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30. What happens when a thing burns

	Very <u>Useful</u>	Useful	Very little use	No use <u>at all</u>
31. How to put out a fire				
32. Treatment of burns				
33. Common fire laws, state and local				
34. Fire drills				
35. How to ring a fire alarm				
36. Fire extinguishers, kinds, uses				
37. How the earth was formed				
38. How the first rocks were made				
39. The 3 families of rocks, how to recognize them				
40. Why New England and Natick are rocky				
41. How rocks have affected industry in this locality				
42. Classroom practice in recognizing kinds of rocks				
43. How the earth is changing				
44. Volcanoes, geysers, springs and caves				
45. Microscopic classwork with cells				
46. Study of organic and inorganic things				
47. How living things are classified				
48. Life history of the frog				
49. How cells grow				
50. Comparison of plants and animals				
51. Parts of a plant				
52. Parts of a flower				
53. Self and cross pollination				
54. Artificial pollination				
55. The work of bees				
56. Parts of the human body				
57. Bones and muscles				
58. How nerves work				
59. Effect of tobacco				
60. Effect of alcohol				
61. Study of tobacco and alcohol advertisements				

Very Useful use at all
 Very little No use

31. How to put out a fire
32. Treatment of burns
33. Common fire laws, state and local
34. Fire drills
35. How to ring a fire alarm
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37. How the earth was formed
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55. The work of bees
56. Parts of the human body
57. Bones and muscles
58. How nerves work
59. Effect of tobacco
60. Effect of alcohol
61. Study of tobacco and alcohol advertisements

Section 2 of the questionnaire differed from Section 1 only in the heading and column captions which referred to difficulty. The four columns for pupil ratings were labeled: Very Difficult, Difficult, Easy, and Knew it Already.

Section 3 concerned interest and the rating columns were headed: Very Interesting, Interesting, Of Little Interest, and Disliked the Topic.

Section 4 dealt with pupil opinions of the methods and materials used in the course. Ratings were asked for interest and usefulness with column headings as mentioned above.

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